

**ECONOMIC ANALYSIS OF PROPOSED
AMENDMENTS TO THE TSCA SECTION 8
INVENTORY UPDATE RULE**

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EXECUTIVE SUMMARY

The Environmental Protection Agency (EPA) currently requires manufacturers and importers of certain chemical substances to report plant site and production volume information to the Agency every four years. The information is collected under reporting requirements known as the Inventory Update Rule (IUR), based on EPA's authority under Section 8(a) of the Toxic Substances Control Act (TSCA). EPA is proposing to amend these reporting requirements to collect additional information. The economic analysis presented here examines changes in reporting that would result from these amendments and associated costs, benefits, and impacts.

The proposed rule would amend the IUR data collection in several ways. First, it would collect various types of exposure-related data about certain chemicals (such as the number of workers potentially exposed, the types of industrial processes the chemical is used in, the number and type of processing sites, the types of commercial and consumer uses of the chemical, and the concentration in these products). The IUR amendments would also make inorganic chemicals reportable, raise the reporting threshold, add a second threshold for reporting use information, reduce inappropriate or unnecessary CBI claims, improve links to other EPA data, and make administrative changes that would enhance the effectiveness of the data collected under the existing regulation.

EPA would use the information collected under this proposed rule to screen chemicals based on relative risk, set risk assessment priorities among chemical substances of potential concern, and support EPA's pollution prevention and environmental protection activities. The data collected through these amendments would help to determine potential risks, identify opportunities for safer substitutes, target specific population groups, and evaluate the need for risk management. The data would allow EPA to better focus its programs and use resources more efficiently. Currently, the lack of nationwide information related to chemical production and use prevents the Agency from screening large numbers of chemicals in a timely manner. The amended IUR data are critical if EPA is to meet its Government Performance and Results Act (GPRA) goal to screen all chemicals in commerce by 2005.

This report analyzes multiple regulatory options for amending the IUR by varying the reporting thresholds, exemptions, and reporting cycle. The proposed IUR amendments would collect basic information on about 8,900 chemicals out of the more than 75,000 chemicals on the TSCA Inventory. Approximately 1,000 chemical manufacturers or importers would be required to report. These companies would submit 25,500 reports covering approximately 3,050 sites. Approximately 40 percent of the reports (covering forty-five percent of the chemicals) would be full reports (i.e., containing exposure-based use information), while the remaining 60 percent would be partial reports. Most of these reports must already be submitted under the existing IUR requirements, and companies would simply be providing additional information. However the IUR amendments would also adjust the universe of reportable chemicals. There are over 1,200 inorganic chemicals that would be reportable to the IUR for the first time, and about 1,500 originally reportable chemicals that would no longer be reported as a result of the increase in the reporting threshold. Please note that the proposed rule was revised substantially during the interagency review process; the addendum to this economic report that appears before chapter 1 contains important information on these changes.

EPA estimates the incremental cost of the amendments to be between \$36 million and \$51 million for the first reporting cycle. Costs would be lower after the first year, and are estimated at \$27 million to \$41 million in each subsequent reporting cycle (every four years). These startup and quadrennial costs are equivalent to an annual cost of between \$10 million and \$14 million.

EPA has taken a number of steps to reduce reporting burden, including raising the reporting threshold from the existing level of 10,000 pounds up to 25,000 pounds; introducing a second threshold of 300,000 pounds to reduce the number of reports for which processing and use information must be provided; establishing a partial exemption for inorganic chemicals (at least in the first reporting cycle); establishing a partial exemption for petroleum stream chemicals, and a full exemption for natural gas; requiring the reporting of only known or reasonably ascertainable facility and manufacturing information and readily obtainable processing and use information; and allowing submitters to report much of the information in ranges.

The small business impacts of the rule are minimal. Most small businesses are not affected, since the regulations exempt companies meeting certain small business criteria. The costs would be relatively small for those small businesses that would report. For the roughly 200 to 350 small

businesses expected to report, the cost of reporting is estimated at 0.20 percent or less of sales. Because the regulatory costs represent a small fraction of a typical firm's sales, the financial impacts of the regulation would not be significant.

Because the proposed IUR amendments are an information collection exercise, there are no negative environmental equity issues associated with them. Instead, the information that would become available through the proposed rule would enable the Agency to target educational, regulatory, or enforcement activities towards industries or chemicals that pose the greatest risks and to target programs for population groups that are at the highest risk. Thus, the information proposed to be gathered under the IUR amendments would help EPA to make decisions that would benefit potentially-at-risk communities, some of which may be disadvantaged.

SUMMARY

Introduction

Based on its authority under Section 8(a) of the Toxic Substances Control Act (TSCA), the Environmental Protection Agency (EPA) currently requires manufacturers and importers of certain chemicals to report limited data, including production volume, every four years. The regulation that requires the reporting is known as the Inventory Update Rule (IUR). EPA is proposing to amend the IUR to change the reporting threshold, alter certain reporting exemptions, require companies to provide use and exposure information for some of the chemicals, and make administrative and confidential business information (CBI) reporting changes that would enhance the effectiveness of the existing regulation. The additional data would assist EPA in evaluating potential exposures and risks resulting from industrial chemical operations and consumer uses of chemical substances. EPA would use the information collected under this proposed rule to set risk assessment priorities among chemical substances of potential concern and to support EPA's pollution prevention and environmental protection activities. The information would also be valuable to other public and private sector organizations for similar purposes. This analysis reviews the costs, benefits, and impacts of the proposed rule to amend the TSCA Inventory Update Rule reporting requirements.

Background

Congress enacted TSCA in 1976 to establish a number of new requirements and authorities for identifying and controlling toxic chemical risks to human health and the environment. To implement its responsibilities under TSCA, EPA must identify potential chemical risks, assess the magnitude of the identified risks, and manage risks determined to be unreasonable. TSCA provides EPA with the authority to gather information (such as chemical toxicity, chemical exposure, and other related data) to determine whether a chemical substance may present an unreasonable risk of injury to human health or the environment.

Section 8(b) of TSCA requires EPA to compile and keep current an inventory of chemical substances in commerce (excluding pesticides, tobacco, nuclear material and byproducts, firearms and ammunition, food and food additives, drugs, and cosmetics). In 1977 EPA collected basic information

about subject chemicals, including the chemical identity, the identity of sites that were manufacturing or importing the chemical, and the chemical's production volume (in a range). EPA compiled the information into the initial TSCA Inventory. The TSCA Inventory originally contained approximately 60,000 chemicals. As new chemicals enter into commerce in the U.S., they are added to the Inventory. As a result, the Inventory currently contains more than 75,000 chemicals.

Section 8(a) of TSCA authorizes EPA to collect a broad variety of information about chemicals in commerce. EPA exercised this authority in 1986 when it promulgated the Inventory Update Rule (51 FR 21438; June 12, 1986). The Inventory Update Rule (IUR), codified at 40 CFR Part 710, requires chemical manufacturers and importers to provide updated information for chemicals in the TSCA Inventory meeting specific criteria. IUR reporting is limited to manufacturers and importers of chemical substances. Small businesses as defined in TSCA section 8 are exempted from reporting. There is a production volume threshold of 10,000 pounds a year, and exemptions from reporting for inorganic chemicals, polymers, microorganisms, and naturally occurring substances. EPA created the thresholds and exemptions in the IUR to focus the data collection on the chemicals thought at the time to be most likely to require information for screening and risk assessment purposes and to exclude chemicals for which screening data were thought unlikely to be needed.

The IUR requires companies to submit reports every four years; data have been collected in 1986, 1990, 1994 and 1998. Under the original IUR, companies report company, plant site, and chemical identity information; whether the chemical is manufactured or imported; whether it is site limited or is distributed off-site; and the production volume. Companies can claim specific data elements as confidential business information (CBI) by using a check-box, although CBI claims for chemical identity require up-front substantiation. Companies must retain records that support their submissions for four years following the reporting period. EPA received about 25,000 submissions from 3,000 facilities for about 8,900 chemicals in the 1994 reporting cycle.¹ EPA enters the information into the Chemical Update System (CUS), a confidential database.

¹ It should be noted that the numbers of chemicals, reports and facilities presented above include statistics for chemicals with a production volume lower than 10,000 pounds that reported voluntarily.

Need to Amend the Inventory Update Rule

EPA uses the IUR data to identify chemical substances, plant sites, and exposures of most concern and to set priorities for more detailed risk assessment and potential risk management actions. Although risk is based on hazard and exposure, EPA's past approaches to chemical risk screening have primarily used production volume as a proxy for exposure. Where available, this is supplemented by relatively scarce public data on chemical use and exposures. To make more accurate estimates, EPA needs better information on exposure. Information such as how chemicals are used, how many sites use the chemical, and how many workers are potentially exposed would enable EPA and others to develop exposure scenarios.

The existing public data sources are inadequate because they are very spotty in coverage and are often outdated. While EPA has used these sources in the past (because they do contain some useful data), they are far from adequate for prioritizing, identifying chemicals of concern to specific populations, and managing risks on a nationwide basis.

Existing EPA data collections typically do not provide exposure-related information that the Agency needs for risk screening, such as industrial and commercial uses, the number of workers potentially exposed, or levels of use in consumer products. Many programs cover only a limited set of chemical substances, or a limited number of chemical uses, or only specific industry sectors. Others are regional, rather than national in scope. Some of the programs collect information on categories of pollutants or on waste streams and not on specific chemical substances, making it difficult to use data in chemical risk screening. And some collect monitoring data for a specific media (e.g., air or water), but do not collect information on the potential sources of the chemical releases to the environment.

Commercial data sources are very limited in the number of uses and detail of use information, and generally provide information only on large volume chemicals. Although the sources can provide some useful information for these large volume chemicals, none of these information sources (considered individually or in aggregate) would be adequate substitutes for the information EPA is proposing to collect because each either covers a narrow set of reportable chemicals, was a one-time collection, or does not contain adequate exposure-related data elements for risk screening.

Information specific to the manufacture and use of chemicals, including information on the potential for exposure during the chemical's life cycle, have not been comprehensively or

systematically collected at the national level. Each of the existing data sources has limited utility due to a small or specialized sample size, a limited number of chemicals, or age of the data. None of the databases, either alone or combined, provide the Agency with the necessary array of screening level data.

After reviewing the data available from existing sources, EPA determined that the best way to address the lack of exposure-related data was to collect basic information related to potential chemical exposures through the IUR. EPA has also identified problems associated with the original IUR reporting requirements, including incomplete facility identity information that creates difficulties in matching the IUR data to other Agency databases and the Agency's inability to publicly cite useful information because a company has inappropriately claimed that the data should be classified as TSCA CBI. The Agency determined that amending some of the IUR's administrative and CBI provisions would provide EPA and others with needed flexibility in using these data.

Options for IUR Amendments Analyzed

In addition to those options analyzed during the interagency review process, and presented in the addendum, this report analyzes fourteen regulatory options for amending the IUR reporting requirements. The options were created by varying the reporting threshold for facility and manufacturing data, the threshold for processing and use data, exemptions based on the type of chemical, and the reporting cycle. These options are summarized in Table S-1, below.

EPA originally considered proposing to amend the IUR based on Option 4, which raises the threshold for reporting facility and manufacturing information from 10,000 to 25,000 pounds; adds a requirement to provide processing and use data; creates a 100,000 pound threshold for reporting use and exposure data; retains the existing four year reporting cycle; and provides a partial reporting exemption for certain petroleum stream chemicals. However, during the interagency review process, the proposed option was revised to include a full exemption for natural gas, a partial exemption for inorganic chemicals, and a 300,000 pound threshold for reporting use and exposure data. In particular, the revised proposed amendments would:

- *Increase reporting threshold.* The reporting threshold would be increased from 10,000 to 25,000 pounds.

- *Remove inorganic exemption:* Inorganic chemicals would no longer be exempted from reporting (inorganic chemicals would not be required to report exposure and use data, see below).
- *Add exposure-related data:* Two types of exposure-related data would be added:
 - All reportable chemicals would supply *exposure-related manufacturing information* on the number of workers potentially exposed during manufacturing, the physical state of the chemical, the maximum concentration of the chemical when manufactured, and whether production volume is confidential when reported in a range.
 - Large volume chemicals would also report exposure-related use information on industrial processing and use and commercial and consumer use. *Industrial processing and use information* includes process or use codes, 5-digit North American Industry Classification System (NAICS) codes, industrial function categories, the percent of production volume in each category, site-limited status, number of sites (in ranges), and number of potentially exposed workers (in ranges). *Consumer and commercial end use information* includes commercial/consumer end use categories, percent of production volume in each category, and maximum concentration (in ranges) of the chemical in the commercial/consumer end use.
- *Create reporting exemptions.* Certain petroleum streams, inorganic chemicals, and any chemicals that the Agency determines to be low priorities for assessment would be exempted from providing exposure-related use data (industrial processing and use information, and commercial and consumer use information). In addition, natural gas² would be fully exempted from reporting.
- *Create a second reporting threshold.* Chemicals produced or imported at volumes less than 300,000 pounds would complete a partial reporting form, requiring only facility and manufacturing information and CBI reassertion. Chemicals with production volumes greater than 300,000 pounds would complete the full form, requiring reporting of facility and manufacturing information as well as exposure-related use data.
- *Change the CBI requirements:* Companies would be required to provide up-front substantiation before claiming facility identity as CBI, and to resubstantiate previous CBI claims. Companies would be required to determine if CBI claims for production volume are valid if the information is presented in a specified range.
- *Make certain administrative changes:* The reporting cycle would be changed from the current fiscal year to the calendar year. As part of the facility identification, companies would be required to report the EPA Identification Number and county name of the plant site, as well as the Dun & Bradstreet Number and mailing address of the parent company. The records retention period would be lengthened from four to five years.

² "natural gas" includes the following CAS Registry Numbers: 64741-48-6, 68919-39-1, 8006-61-9, 68425-31-0, 8006-14-2, 68410-63-9.

Table S-1. Options Summary

Option	Thresholds		Reporting Cycles	New Exemptions	Number of Chemicals	Number of Sites	Number of Reports	Percent of Reports		First Year Cost (\$ million)
	Facility and Manufacturing Information	Use Information						Partial	Full	
Reporting Threshold Options										
1	10,000 lb	10,000 lb	4 yrs.	Partial Exemption Chemicals ^a	10,439	3,670	30,598	19%	81%	\$69.2 - 91.2
2	25,000 lb	25,000 lb	4 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	21%	79%	\$58.3 - 76.6
3	10,000 lb	100,000 lb	4 yrs.	Partial Exemption Chemicals ^a	10,439	3,670	30,598	42%	58%	\$47.9 - 65.4
4 ^b	25,000 lb	100,000 lb	4 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	42%	58%	\$47.9 - 65.4
4a ^c	25,000 lb	300,000 lb	4 yrs.	Partial Exemption Chemicals ^{a,c}	8,898	3,045	25,586	61%	39%	\$36.0 - 51.4
5	10,000 lb	500,000 lb	4 yrs.	Partial Exemption Chemicals ^a	10,439	3,670	30,598	67%	33%	\$42.3 - 62.0
6	25,000 lb	500,000 lb	4 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	62%	38%	\$38.1 - 54.8
7	25,000 lb	1,000,000 lb	4 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	69%	31%	\$35.1 - 51.4
8	25,000 lb	10,000,000 lb	4 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	84%	16%	\$27.7 - 43.4
9	25,000 lb	500,000 lb/100,000 lb ^d	4 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	62%	38%	\$38.1 - 54.8
								42%	58%	
Reporting Exemption Option										
4a ^c	25,000 lb	300,000 lb	4 yrs.	Partial Exemption Chemicals ^{a,c}	8,898	3,045	25,586	61%	39%	\$36.0 - 51.4
10	25,000 lb	100,000 lb	4 yrs.	Site-Limited Petroleum Streams	8,617	3,365	25,577	23%	77%	\$54.4 - 71.5
11	25,000 lb	100,000 lb	4 yrs.	Partial Exemption Chemicals ^a	7,796	2,945	22,309	46%	54%	\$36.8 - 50.4
Reporting Cycle Options										
4a ^c	25,000 lb	300,000 lb	4 yrs.	Partial Exemption Chemicals ^{a,c}	8,898	3,045	25,586	61%	39%	\$36.0 - 51.4
12	25,000 lb	100,000 lb	2 yrs./4yrs. ^e	Partial Exemption Chemicals ^a	8,904	3,485	26,811	42%	58%	\$47.9 - 65.4
13	25,000 lb	100,000 lb	2 yrs.	Partial Exemption Chemicals ^a	8,904	3,485	26,811	42%	58%	\$47.9 - 65.4
14	25,000 lb	100,000 lb	one-time	Partial Exemption Chemicals ^a	8,904	3,485	26,811	42%	58%	\$47.9 - 65.4

^a Partial exemption chemicals currently include only petroleum stream chemicals. These chemicals are exempted from providing processing and use information.

^b Option 4 was the proposed option.

^c Option 4a was added during Interagency review and is discussed in the addendum to this report.

^d Option 9 has a reporting threshold of 500,000 pounds for the full report in the first reporting cycle and 100,000 pounds for the full report in future reporting cycles.

- ^e Option 12 has a 2 year reporting cycle for facility and manufacturing information and a 4 year reporting cycle for processing and use information.

Analysis of Options

Table S-1 also summarizes the results of the analysis for each of the fourteen different options, including the number of sites that would report, the number of reports that would be submitted, the distribution of partial and full reports, and the cost of reporting. Under the proposed rule (not shown in the table), the amended IUR would collect basic information on about 8,900 chemicals out of the more than 75,000 chemicals on the TSCA Inventory. Approximately 1,000 chemical manufacturers or importers would be required to report. These companies would submit about 25,500 reports covering approximately 3,300 sites. Approximately 40 percent of the reports (covering forty-five percent of the chemicals) would be full reports (i.e., containing processing and use information), while the remainder would be partial reports. Most of these reports must already be submitted under the existing IUR requirements and companies would simply be providing additional information. There are more than 1,200 inorganic chemicals that would be reportable to the IUR for the first time, and about 1,500 originally reportable chemicals that would no longer be reported as a result of raising the reporting threshold.

Costs of the IUR amendments would be borne by the chemical industry and EPA. Industry costs are associated with complying with the regulation, while EPA costs are associated with administering the regulation and maintaining the collected data. EPA estimated industry costs based on the time required for companies to determine if they must comply with the amended IUR, become familiar with the rule, prepare and submit reports, and maintain records of the submitted data. EPA has assumed that the burden associated with reporting under the IUR amendments would decrease over time as companies become more familiar with the new requirements. Burden would also decrease over time to the extent that the information being reported remains somewhat constant from one reporting period to the next. EPA assumed that no capital costs would be associated with this rule. EPA estimated the total cost of the IUR amendments by multiplying these estimated costs by the estimated number of sites and submissions that would be affected by the IUR amendments.

The estimated cost to submit a report depends on the type of chemical being reported (e.g., organic chemical, petroleum stream chemical, or inorganic chemical) and the production volume of the chemical being reported (e.g., between 25,000 and 300,000 pounds, or greater than or equal to 300,000 pounds). The estimated incremental cost or savings per report are as follows:

- Chemicals produced at a volume between 10,000 pounds and 25,000 pounds are exempt from reporting. This results in avoided reporting costs (i.e., savings) of approximately \$565 to \$892 per report for these chemicals.
- Chemicals with a production volume between 25,000 and 300,000 pounds, or those qualifying for one of the partial exemptions, can submit a partial report that does not contain use information. The incremental cost for a partial report is estimated to range from \$688 to \$1,883 in the first year and \$459 to \$1,813 in subsequent reporting cycles.
- Chemicals produced at over 300,000 pounds that do not qualify for one of the partial exemptions must file a full report. The incremental cost for a full report is estimated at \$2,520 to \$3,872 in the first year and \$2,036 to \$3,267 in subsequent reporting cycles.

In all of these cases the high end of the range represents inorganic chemicals, which have a higher incremental cost because they have heretofore been exempt from reporting. Companies are expected to file an average of 8.4 reports per site. An estimate of the average cost per site can be derived by multiplying the cost per report by the estimated 8.4 reports per site.

EPA estimates the incremental cost of the amendments to be between \$36 million and \$51 million for the first reporting cycle. Costs for subsequent reporting cycles (every 4 years) are estimated at \$27 million to \$41 million. The startup and quadrennial costs are equivalent to an annual cost of \$10 million to \$14 million per year. Projected incremental costs to EPA are relatively small and are estimated at \$524,879 in the first year of reporting, and \$275,364 annually.

EPA used exemptions or partial exemptions to reduce the number of reports (and thus costs), where this did not conflict with the utility of the data collection. Specifically, EPA reduced the number of reports by:

- raising the reporting threshold from 10,000 pounds to 25,000 pounds, and adding a full exemption for natural gas (reducing the number of reports by about 3,800 and 1,200, respectively);
- introducing a second threshold of 300,000 pounds for reporting use data (reducing the number of reports for which full information must be provided by about 7,700); and
- establishing a partial exemption for petroleum streams, and inorganic chemicals (reducing the number of full reports by over 5,600 for petroleum streams (some of these reports would have been for chemicals produced in volumes above 100,000 pounds), and by about 3,300 for inorganic chemicals).

The result is that full reports are expected on only about 4,000 chemicals and partial reports on about 5,000 chemicals (out of the more than 75,000 chemicals on the TSCA Inventory). EPA also reduced the specificity of the information required by:

- requiring the reporting of only known or reasonably ascertainable facility and manufacturing information and readily obtainable processing and use information;
- requiring that submitters report much of the information in ranges, reducing the need to generate precise estimates; and
- requiring processing and use information only on the bulk of the chemical's volume, not necessarily on 100 percent of the volume (for instance, only on the top ten NAICS codes).

These steps limit the amount of information required, reducing the time and effort spent by the chemical industry on complying with the amendments.

Benefits

The data collected through this rule would assist EPA in evaluating potential exposures and risks resulting from industrial chemical operations and commercial and consumer uses of chemical substances. EPA would use the information collected under this proposed rule to set risk assessment priorities among chemical substances of potential concern and to support EPA's pollution prevention and environmental protection activities. The information would also be valuable to other public and private sector organizations for similar purposes.

Because the current state of knowledge about the economics of information is not highly developed, this analysis does not attempt to assign monetary value to the direct benefits of the information collected by this rule. The direct benefits are the improved quality and timeliness of decision-making in EPA's risk screening process and EPA's improved ability to focus its programs and use resources more efficiently. Because the outcome of EPA's screening and risk management programs for these chemicals cannot be predicted, it is also not possible to quantitatively estimate the indirect benefits of the rule in terms of lives saved, illness averted, or ecosystem damages avoided. While the benefits cannot be monetized or quantified, the analysis does qualitatively describe the types of benefits that are expected. The benefits of some of the major changes are described below and summarized in Table S-2.

The proposed amendments are directed at improving the data available for risk screening of existing chemicals. Improving the data available for the chemical screening process provides EPA with the means to more effectively protect human health and the environment. At present, EPA uses hazard information in conjunction with production volume (as a proxy for exposure) as the primary tools to

focus existing chemical resources. The addition of use and exposure-related information would provide a better risk characterization and allow EPA to develop priorities based on that risk. Identifying and focusing on those chemicals with greater risks earlier in the process reduces the health care and environmental costs borne by society. The amendments will also require reporting on inorganic chemicals, which will enable the Agency to identify and target risks from this class of chemicals.

The amendments make a number of administrative changes that would increase the effectiveness of the data that is collected. One example is the proposed change to the reporting period. Under the original IUR, companies report on the basis of their fiscal year, which varies from company to company. Changing the reporting period to coincide with the calendar year as opposed to a company's fiscal year would make the data set internally consistent. It would also make the reporting period for the IUR data consistent with other EPA databases, most of which are on a calendar year basis. Another example of an administrative change is the proposed requirement for companies to provide EPA identification numbers on the IUR report. This would enable the Agency to more readily and accurately combine site-specific information from various databases. As one benefit, this would allow EPA to check the validity of its models, and improve its ability to predict exposures for all chemicals.

Much of the information reported through the original IUR is claimed CBI, which reduces the usability of the data. Information that is claimed to be CBI can only be used by staff with a security clearance, and the data cannot be included in any report or other document that will be made available to the public. As a result, if EPA uses this information (for instance to set risk management priorities), the basis for the decision cannot be completely shared with the public. If EPA only uses data that has not been claimed as confidential, the results will be incomplete and of limited usefulness. Several of the proposed amendments are intended to limit CBI claims to only those that are necessary to protect legitimate business interests. For instance, since companies are less likely to claim production volume as CBI if the data is presented as a range rather than a point estimate, the IUR amendments add a range reporting element. Data that has been appropriately claimed as CBI would continue to be treated as confidential. These changes would allow EPA to provide answers the public needs without breaching the confidentiality of legitimate CBI data.

Finally, collecting the proposed IUR information would help further develop and measure the results of private-sector stewardship programs. The data would help to identify potential risks and

opportunities for safer substitutes, target specific population groups, and evaluate the need for risk management.

In general, the additional information collected through the IUR amendments would be used to identify and manage human health and environmental risks. The data would aid in identifying chemicals to which consumers, children, and workers are exposed, establishing priority chemicals for testing, and finding areas where voluntary programs are more likely to provide real gains in environmental protection. Currently, the lack of nationwide information related to chemical production and use prevents the Agency from screening large numbers of chemicals in a timely manner. These amendments are critical if EPA is to meet its GPRA goal to screen all chemicals in commerce by 2005.

As presented in Table S-1, EPA considered a variety of options. These options can be separated into three categories - reporting threshold, reporting exemption, and reporting cycle options. In determining which reporting threshold to propose, EPA considered the number of chemicals on which information would be collected, the burden associated with reporting the information, comments received from a variety of sources, and the future direction of EPA's program. For the reporting exemption options, EPA considered its ability to use the information and the information otherwise available to the Agency. For the reporting cycle options, EPA considered the dynamic nature of the chemical industry and the burden associated with reporting the information. Options based upon the information collected were not analyzed in this economic analysis. Decisions as to the specific information collected were based upon EPA's experience and information needs and are described in the technical support documents.

Small Entity Analysis

Small businesses are the only small entities expected to be affected by the IUR amendments. In addition to the reporting thresholds (that help screen out small businesses), the existing regulation contains two small business exemptions (40 CFR 704.3). First, companies with annual sales of less than \$4 million are exempt from reporting regardless of their production volume. Second, companies with annual sales less than \$40 million are exempt from reporting if they produce less than 100,000 pounds of a regulated substance at a single site. These exemptions are not being changed by the proposed IUR amendments. For the purpose of the small entity analysis, firms with \$40 million or less in annual sales but over 100,000 pounds of production were designated as small businesses.

The rule is estimated to affect between 202 and 336 small businesses. EPA compared the first year cost of reporting due to the IUR amendments to sales at these small businesses. Even using conservative assumptions, the average cost to sales ratio in the first year of reporting is estimated to be 0.20 percent or less. Costs will be an even smaller percentage of sales in subsequent reporting cycles. Because regulatory costs represent a small fraction of a typical firm's sales, the financial impacts of the regulation are likely to be minimal.

Environmental Justice

Because the proposed IUR amendments are an information collection exercise, there are no negative environmental equity issues associated with them. Instead, the information that would become available through the proposed rule would enable the Agency to target educational, regulatory, or enforcement activities towards industries or chemicals that pose the greatest risks, and to target programs to geographic areas that are at the highest risk. Thus, the information proposed to be gathered under the IUR amendments would help EPA to make decisions that would benefit potentially-at-risk communities, some of which may be disadvantaged. Of the 121 million people who live within 10 miles of an IUR site, almost 38 million (30 percent) are minorities. This number is greater than the nationwide rate of approximately 20 percent minority individuals. Roughly 24 million (20 percent) of the people living within 12 miles of an IUR site are at or below 150 percent of the poverty level, which is consistent with the nationwide rate of 21 percent.

Table S-2. Summary of Proposed IUR Amendments

ACTION	RESULT	BENEFIT OR RATIONALE
Raise threshold Raises the production volume-reporting threshold from 10,000 pounds a year to 25,000 pounds a year.	Exempts roughly 3,800 reports for 1,535 chemicals, at a savings of \$21.3 to \$25.8 million in the first year of reporting.	Lowers companies' reporting burden.
Remove Inorganic Exemption Removes the exemption for inorganic chemicals in the original IUR.	Adds approximately 4,500 reports for over 1,200 chemicals, at a cost of \$5.1-\$8.5 million in the first year of reporting, and an annualized cost of \$1.5-\$2.4 million.	Allows EPA to make informed risk-screening decisions about inorganic chemicals.
Production Volume Partial Exemption Adds a 300,000 pound production volume-reporting threshold on processing and use information. This eliminates the requirement to report processing and use information for chemicals produced between 25,000 and 300,000 pounds each year.	Eliminates roughly 7,700 reports for 3,200 chemicals from requirement to report processing and use information.	Reduces the reporting burden on companies that manufacture these eliminated chemicals.
Petroleum Stream Partial Exemption Eliminates the requirement to report processing and use information for petroleum stream chemicals with multiple Chemical Abstracts Service (CAS) numbers.	Exempts roughly 5,600 reports from requirement to provide processing and use information, saving \$10.3 to \$11.1 million in the first year of reporting.	EPA does not feel that full reporting on petroleum streams is necessary at this time. The exemption reduces the reporting burden on companies that manufacture chemicals whose risks are difficult to quantify.
Inorganic Partial Exemption Eliminates the requirement to report processing and use information for inorganic chemicals, at least in the first reporting cycle.	Exempts roughly 3,300 reports from requirement to provide processing and use information, saving \$6.3-6.9 million in the first year of reporting.	EPA lacks even basic production information on inorganic chemicals, and will need to assess data on these chemicals before requiring processing and use data.
Natural Gas Exemption Eliminates all reporting for natural gas with six specific Chemical Abstracts Service (CAS) numbers.	Exempts roughly 1,225 reports from all reporting, saving \$1.6 to \$2.8 million in the first year of reporting.	Reduces burden by eliminating a large number of reports on these specific chemicals for which EPA feels current IUR data is adequate.

ACTION	RESULT	BENEFIT OR RATIONALE
<p>Low Priority Chemicals Partial Exemption EPA is considering eliminating the requirement to report processing and use information on those chemicals identified by EPA as low priorities for assessment (See discussion in Preamble, Section IV.C).</p> <p>Facility & Manufacturing Information Requires additional facility and manufacturing information:</p> <ul style="list-style-type: none"> • the company's Dun & Bradstreet number and mailing address; • the location of the plant site and mailing address; • the number of exposed workers; • the physical state of the chemical; and • the maximum concentration of the chemical. 	<p>Not estimated, because the number of chemicals of low priority has not yet been determined.</p> <p>Does not change the number of reports required. Increases costs by approximately \$4.9–\$9.6 million in the first year of reporting.</p>	<p>Reduces the reporting burden on companies that manufacture chemicals that are currently low priorities for risk assessment as determined by EPA.</p> <p>Increases the usefulness of information and improves EPA's ability to make more informed risk-screening decisions.</p> <p>Better facility and company identification improves EPA's ability to link information with other databases.</p> <p>Worker exposure and chemical concentration information gives EPA the ability to complete a screening-level assessment of risks during the manufacture of chemicals.</p>
<p>Processing & Use Information Requires additional processing and use information:</p> <ul style="list-style-type: none"> • process or use code; • 5-digit North American Industry Classification System (NAICS) code for processing; • industrial function category; • percent of production volume in function category; • number of processing sites (in ranges); • number of potentially exposed workers (in ranges); • end-use category; • percent production volume in end-use category; • maximum concentration (in ranges) of the chemical in the end-use. 	<p>Results in an increase in unit costs; does not change the number of reports required.</p> <p>Processing and use exposure information is collected from approximately 15,431 reports on roughly 6,046 chemicals, at an estimated cost of approximately \$35.4–\$44.3 million in the first year of reporting.</p>	<p>Increases EPA's ability to make informed risk-screening decisions.</p> <p>The earlier identification of problems and fewer misidentifications improves the targeting of resources by EPA and industry.</p>

ACTION	RESULT	BENEFIT OR RATIONALE
<p>Reporting period Changes the reporting period from the company's fiscal year to the calendar year.</p>	<p>Does not change unit costs or the number of reports required.</p>	<p>Reporting is easier for industry because the time frame would be the same as for other reporting requirements.</p> <p>All data within the IUR database would reflect a consistent time frame, which would make data inferences more reliable.</p> <p>Reporting period consistent with other EPA data collections.</p>
<p>Extend record retention period Extends record retention period from 4 to 5 years.</p>	<p>Does not change the number of reports required.</p>	<p>Since the reporting cycle is 4 years, this will make records from prior reporting period available for EPA enforcement activities.</p>
<p>Confidential Business Information Requires separate confidentiality claims for production volume (PV) ranges, in addition to exact PV.</p> <p>Requires up-front substantiation of confidentiality claims for plant site information.</p> <p>Requires the reassertion of CBI claims for each reporting period.</p>	<p>Results in an increase in unit costs; does not change the number of reports required.</p> <p>Increases first-year industry costs by \$6.4-\$14.3 million over the baseline. Annualized costs increase by \$2.3 - \$5.1 million.</p> <p>Approximately 20 percent of submissions received during the 1994 reporting period claimed plant site information as CBI, suggesting that a comparable percentage would provide up-front substantiation under the amendments.</p> <p>Approximately 64 percent of submissions received during the 1994 reporting period claimed some data element as CBI, indicating that up to this percent may have to reassert claims under the IUR amendments.</p>	<p>Produces greater flexibility in the use of the data.</p> <p>PV ranges are less likely to be claimed to be confidential than point estimates. PV ranges maintain confidentiality for point estimates, while allowing greater flexibility in the use of the information.</p> <p>Up-front substantiation of plant site claims reduces the frequency of inappropriate CBI claims being filed, while protecting data that can legitimately be claimed as CBI.</p>

CHAPTER I. INTRODUCTION

This economic analysis provides estimates of the costs and benefits expected to result from implementation of the Inventory Update Rule (IUR) amendments. The original IUR requires chemical manufacturers and importers to collect, maintain, and submit location and production volume information for chemicals with production volumes of 10,000 pounds or higher. The proposed IUR amendments will change this reporting threshold to 25,000 pounds and will augment the required facility and production information. In addition, the amendments will require sites with production volumes of 100,000 pounds or higher to collect, maintain, and submit additional information to the Agency regarding chemical use and exposure. Furthermore, changes in administrative requirements and exemption status for various chemical groups are proposed.

The costs associated with these amendments include industry costs due to collecting, maintaining, and submitting the required information and government costs attributable to data management. Benefits of the amendments include providing information necessary for the Agency to develop chemical screening priorities, streamline regulatory efforts, and make informed risk assessment and management decisions. The collected information will improve EPA's understanding of potential exposures resulting from industrial chemical use, allow EPA to more accurately track chemical exposure and use, and permit EPA to more effectively target chemicals that pose the greatest hazard or risk. Ultimately, society will benefit from EPA's improved programs.

The remainder of this chapter provides information on EPA's statutory authority for implementing the proposed IUR amendments, a discussion of the regulatory history, a description of the original rule requirements and the proposed changes, an overview of the regulated community, and a detailed description of the contents of this report.

A. Statutory Authority

Congress has granted EPA broad authority to collect information on chemical substances, including information that will help EPA in assessing the magnitude and extent of human and environmental exposure to chemicals used in commerce. Specifically, under Section 8(a) of the Toxic Substances Control Act (TSCA) (15 U.S.C. 2607(a)), EPA is authorized to promulgate regulations

requiring chemical industry entities to report production and use information on various types and classes of chemicals. A detailed description of the types of chemical-specific information that the Agency is authorized to collect is provided under TSCA §8(a)(2); a summary is presented in Box I-1.

B. Description of Rule

This section describes the regulatory history leading to the TSCA Inventory Update Rule, the original requirements of the rule, and the proposed changes to the rule.

1. Regulatory History

The TSCA Chemical Substances Inventory (42 FR 64572, December 23, 1977) was created just after TSCA's passage into law. The Inventory lists all TSCA chemicals in commerce in 1977, thereby providing a snapshot of the chemicals manufactured or processed in the United States. All chemicals are included, with the exception of pesticides, tobacco, nuclear material, firearms and ammunition, food and food additives, drugs, and cosmetics. Chemicals completing the EPA's New

Box I-1. Chemical-specific Information EPA Is Authorized To Collect Under Section 8(a) of the Toxic Substances Control Act

1. Common or trade name, chemical identity, and molecular structure of each chemical substance or mixture for which reports are required.
2. Categories or proposed categories of use for each substance or mixture reported.
3. The total amount of each substance and mixture manufactured or processed and each of its categories of use; reasonable estimates of the total amount to be manufactured or processed and each of its categories of use.
4. A description of the byproducts resulting from the manufacture, processing, use, or disposal of each such substance or mixture.
5. All existing data concerning the environmental and health effects of such substances or mixtures.
6. The number of individuals exposed, and reasonable estimates of the number who will be exposed, to such substances or mixtures in their places of employment and the duration of such exposure.

Chemicals³ process and filing a Notice of Commencement have been added to the Inventory; no chemicals have been removed. There are currently about 75,000 chemicals listed.

Under the authority of TSCA Section 8(a), EPA promulgated regulations requiring chemical manufacturers and importers to submit data on a subset of the chemical substances listed in the TSCA Inventory (51 FR 21447, June 12, 1986). These regulations are commonly called the TSCA Inventory Update Rule (IUR). Data are collected every four years on an average of 9,200 discrete chemicals. This collection provides a more up-to-date picture of the TSCA chemicals in commerce, generating data that are used, with the TSCA Inventory data, to support many EPA risk management activities. The data also provide general support to many other EPA and non-EPA program activities.

After analyzing the data submitted under the IUR during the 1986, 1990, and 1994 reporting periods, EPA identified the need to amend the IUR to provide basic information related to potential chemical exposures. EPA plans to use this new information to improve its chemical screening, risk assessment, and risk management capabilities. EPA also identified the need to amend some administrative provisions in the IUR to enhance the data's usefulness.

2. Original IUR Requirements

The original IUR requires that members of the regulated community submit information on certain TSCA chemicals once every four years. Reporting is mandatory for each regulated chemical produced or imported in annual quantities of 10,000 pounds or greater, although inorganic substances, polymers, microorganisms, and naturally occurring chemical substances are exempt from reporting. Reporters are required to provide the following information:

- Company Information requires information for a technical contact including company name, contact name, company street address, and telephone number;
- Plant Site Identification includes reporting the identification and address information for a manufacturing plant site, including plant site name, EPA Identification Number, Dun & Bradstreet number, and plant site street address;

³ Chemicals listed on the TSCA Inventory are referred to as Existing Chemicals. Chemicals not currently listed are referred to as New Chemicals, and all producers intending to manufacture or import a new chemical must comply with the Agency's New Chemical program. The New Chemicals Program (NCP) screens new chemicals to determine if and under what conditions they can be brought into the United States. Once a chemical passes through the program, the manufacturer or importer files a Notice of Commencement indicating that the chemical will now be in commerce.

- Chemical Identifying Number involves reporting both the specific chemical name and the Chemical Abstracts Service (CAS) Registry Number, or other identifying number, of the chemical substance;
- Manufacturer/Importer Activity requires identifying whether the chemical is produced or imported;
- Site-Limited Activity entails indicating whether the chemical substance reported is site-limited;⁴
- Production Volume must be reported for the relevant chemical manufactured at the plant site;
- Confidential Business Information (CBI) status (claimed/not claimed) must be indicated for plant site identification, company name, chemical identification, manufacturer/importer activity, site-limited activity, and production volume. For chemical identification, up-front substantiation of CBI claims is required; and
- Certification Statement requires a signature certifying that complete and accurate information is provided.

3. Proposed Reporting Requirements

The proposed reporting requirements under the IUR amendments encompass changes in the reporting thresholds, timing of reports, exemptions, and the amount and type of information that must be collected and submitted to the EPA.

a. Reporting Thresholds, Reporting Cycles, and Exemptions

The amendments propose raising the reporting threshold from 10,000 to 25,000 pounds and adding a second reporting threshold of 100,000 pounds for processing and use information. This means that sites producing or importing TSCA chemicals at annual volumes of 25,000 pounds to 100,000 pounds are required to report only facility and manufacturing information. Sites producing or importing TSCA chemicals at annual volumes of 100,000 pounds or greater are required to report facility and manufacturing as well as processing and use information.

The amendments retain the original reporting cycle of every four years. The amendments propose to change the period of coverage for production from corporate fiscal year to calendar year.

The amendments propose certain changes to the original reporting exemptions. Under the amendments the inorganic chemical exemption is deleted and a partial exemption for petroleum stream chemicals is added. Inorganic chemical producers/importers will follow the same requirements as those

⁴ Site-limited chemicals are those chemicals that are produced and used at the same site. These chemicals do not undergo packaging and shipping.

followed by organic chemical producers/importers. Manufacturers of most petroleum streams will be exempt from reporting processing and use information, but will still need to report facility and manufacturing information. EPA is considering a partial reporting exemption for low priority chemicals and plans to publish a list of all the chemicals that would qualify for this exemption before each inventory collection period.⁵ These listed chemicals may also be exempt from reporting processing and use information.

b. Information Collected

The IUR amendments propose to add additional data elements to the information collected. Information already required under the original IUR will continue to be collected. Form U, the instrument used to collect the IUR information, has been revised; a copy of the revised form is provided in Appendix A. The revised Form U is divided into four parts: Facility Identification Information, Manufacturing Information, Processing and Use Information, and Reassertion of Past CBI Claims. An overview of the proposed changes in the types of information to be reported follows:

Facility Identification Information

- *Company and Plant Site Identification* would include more detailed information to determine the company and plant site identities. The most notable changes include the addition of the county name and the EPA facility identification numbers for the plant site. The EPA ID is a 12-character number originally developed for facilities covered by hazardous waste regulations under RCRA.
- *Up-front CBI Substantiation* for plant site identification is also being added. Under the original IUR, up-front substantiation is only required for chemical identification.

Manufacturing Information

- *Exposure Related Data* include the number of workers involved in manufacturing, the physical form as the chemical leaves the site, and the maximum concentration of the chemical as it leaves the site. Codes representing ranges would be used to report these data.

⁵ Low priority chemicals would be defined as chemicals for which EPA has reduced concerns. These chemicals would be partially exempt under the amended IUR and would be considered low priority under this rulemaking only. Low priority chemicals for this purpose would be those chemicals: (1) that have undergone Agency review under TSCA and are believed to be of low priority for further risk assessment and risk management and (2) that are currently being assessed by the Agency and for which information is available and that is similar to that proposed to be collected under the amended IUR. The list of chemical substances that qualify for the low priority chemical substances partial reporting exemption would be expected to change from one reporting period to the next.

- *Production Volume Data* would now include production volume ranges and a CBI range check box, enabling submitters to determine if the production volume range for their chemical should be considered confidential. The ranges are predetermined.

Processing and Use Information

- *Industrial Processing and Use Exposure Related Data* would be reported for the first time. These data include process or use codes, NAICS codes, industrial function codes, percent of production volume, number of sites, and number of workers for downstream processing and uses of the chemical. Codes representing ranges would be used to report this data and only readily obtainable data would be reported. These data would be reported for the top ten NAICS codes. In addition, a de minimis reporting exemption for these data is being proposed. Processing and use data for reportable substances need not be reported for sites where the concentration of the substance is less than 1 percent by weight, unless the volume not reported is greater than 100,000 pounds.
- *Consumer and Commercial End-use Exposure Related Data* would also be reported for the first time. These data include product category codes, percent of production volume, and maximum concentration of the chemical in each final product. Codes representing ranges would be used to report these data, and only readily obtainable data would be reported.

Reassertion of Past CBI Claims

- Most of the information on Form U can be claimed confidential. This proposal requires the reassertion of any CBI claims made in the previous IUR reporting.

c. Definitions of Reporting Terms

Definitions of several terms that correspond to data needs for the proposed regulatory requirements are provided below to give a general background for the new requirements.

- The total number of workers reasonably likely to be exposed to each reportable chemical substance at each site where the substance is manufactured will be reported under the proposed changes. “Reasonably likely to be exposed” is defined as exposure to a chemical substance under foreseeable conditions of manufacture (including import), processing, distribution in commerce, or use of each reportable chemical, that is more likely to occur than not to occur. This definition includes, but is not limited to, such activities as charging reactor vessels; drumming; bulk loading; cleaning equipment; maintenance operations; materials handling and transfers; and analytical operations. Accidental or merely speculative exposures are excluded. EPA is proposing to require reporting of exposure through the use of the range code corresponding to the submitters’ estimate of the total number of potentially exposed workers.
- Processing is 1) the preparation of a chemical substance, after its manufacture, for distribution in commerce in the same form or physical state or in a different form or physical state from that in which it was received, 2) the preparation of a chemical substance, after its manufacture, for distribution in commerce as a part of a mixture or article containing the substance, or 3) use as an intermediate. Based on this definition, processing involves the incorporation of the chemical into a formulation, an article, or a mixture.
- North American Industry Classification System (NAICS) codes describe the industrial activities associated with each reported industrial processing or use operation. If more than ten NAICS codes apply to a reportable chemical substance, only the ten codes for

the substance that cumulatively represent the largest percentage of production volume (measured by weight) need be reported.⁶

- Industrial function category codes correspond to the appropriate functions of the reportable chemicals, based on a review of different chemical function classification systems both internal and external to EPA. For each NAICS code that is reported, the functional use category code that best represents the specific manner in which the

Box I-2. Proposed Function Categories

- | | |
|---|--|
| <ul style="list-style-type: none"> • Adsorbents and absorbents; • Adhesives and binding agents; • Aerosol propellants; • Agricultural chemicals (non-pesticidal); • Anti-adhesive agents; • Bleaching agents; • Coloring agents, dyes; • Coloring agents, pigments; • Corrosion inhibitors and anti-scaling agents; • Fillers; • Fixing agents; • Flame retardants; • Flotation agents; • Fuels; • Functional fluids; • Intermediates; • Lubricants; • Odor agents; | <ul style="list-style-type: none"> • Oxidizing agents; • pH-regulating agents; • Photosensitive chemicals; • Plating agents and metal surface treating agents; • Processing aid, not otherwise listed; • Process regulators, used in vulcanization or polymerization processes; • Process regulators, other than polymerization or vulcanization processes; • Reducing agents; • Solvents (for cleaning or degreasing); • Solvents (which become part of product formulation or mixture); • Solvents (for chemical manufacture and processing and are not part of the end product at greater than one percent by weight); • Stabilizers; • Surface active agents; • Viscosity adjusters; and • Other. |
|---|--|

reportable chemical substance is used must be selected. These categories were developed from the European Organization for Economic Cooperation and Development's (OECD's) use categories and EPA experience from the New Chemicals Program. Box I-2 provides a listing of the initial Industrial Function Category Codes proposed for the IUR amendments. There is significant overlap between this suggested list for the amended IUR and the industrial function codes used for the Premanufacture Notifications (PMNs), Use Cluster Scoring System (UCSS), Use and Exposure Information Project (UEIP), Comprehensive Assessment Information Rule (CAIR) and the OECD's programs (U.S. EPA 1996d).

- Commercial and consumer product category codes must be reported for each category in which the reportable chemical substance is used. These categories have been developed based on a review of national usage surveys of consumer products, exposure monitoring data, product emissions testing, and a variety of other data sources. This review provided a list of consumer products and a subsequent categorization of these products by common characteristics, such as use scenarios, into major groupings of consumer and commercial products. Box I-3 provides a listing of these proposed commercial and consumer product categories.

⁶ The Standard Industrial Classification (SIC) system has recently been replaced with the North American Industry Classification System (NAICS). NAICS is a six-digit coding system, therefore allowing for more detailed specification than the four digit SIC system.

Box I-3. Proposed Commercial and Consumer Product Categories

- Artists' Supplies;
- Adhesives and sealants;
- Automotive care products;
- Electrical electronic products;
- Glass and ceramic products;
- Fabrics, textiles and apparel;
- Lawn and garden products (non-pesticidal);
- Leather products;
- Lubricants, greases and fuel additives;
- Metal products;
- Paper products;
- Paints and coatings;
- Photographic chemicals;
- Polishes and sanitation goods;
- Rubber and plastic products;
- Soaps and detergents;
- Transportation products;
- Wood and wood furniture;
- Other.

C. Overview of the Regulated Community

The regulated community consists of companies manufacturing or importing chemicals listed on the TSCA Inventory and regulated under TSCA §8. In general, the industry segments that compose the regulated community for the proposed rule are those that produce or import organic and inorganic chemical substances. Manufacturers and importers of non-TSCA chemical substances (such as pesticides, tobacco, nuclear material, firearms and ammunition, food and food additives, drugs, and cosmetics) are not required to report on those chemicals. Chemical processors are also exempt from all reporting. The sections below describe the industries affected by the proposed rule and the types of information that they would be required to report.

1. Chemical Industry Segments Likely to be Subject to the IUR Amendments

The SIC codes correlating with the industry groups likely to be affected by the proposed IUR amendments are identified in Table I-1.⁷ These SIC codes show the primary activities for establishments within industries that manufacture or import chemicals listed on the TSCA Inventory. The

⁷ The Office of Management and Budget prepares Standard Industry Classification (SIC) Codes corresponding to classified industrial activities. These SIC codes are identified at the 2-digit, 3-digit, 4-digit, and higher levels based on the specificity of the activities undertaken.

sectors of the U.S. economy affected by the proposed rule can be classified into the 10 major industry groups briefly described below (EOP 1987)⁸:

⁸ These segments of the chemical industry represent those most likely to be subject to TSCA §8 reporting, but other industry sectors (not listed here) may also manufacture certain subject chemicals.

Table I-1. Standard Industrial Codes for Industries Likely to Be Subject to IUR Reporting

				2899	Chemicals and Chemical Preparations, NEC
Major Group 10. Metal Mining		Major Group 28. Chemicals and Allied Products			
Group 102:	Copper Ores	Group 281	Industrial Inorganic Chemicals		
1021	Copper Ores	2812	Alkalies and Chlorine		
<hr/>		2813	Industrial Gases		
Major Group 13. Oil and Gas Extraction		2816	Industrial Pigments		
Group 131:	Crude Petroleum and Natural Gas	2819	Industrial Inorganic Chemicals, NEC		
1311	Crude Petroleum and Natural Gas	Group 282	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers, Except Glass		
Group 132:	Natural Gas Liquids				
1321	Natural Gas Liquids	2821	Plastics Materials, Synthetic Resins and Nonvulcanizable Elastomers		
Group 138:	Oil and Gas Field Services	2822	Synthetic Rubber (Vulcanizable Elastomers)		
1382	Oil and Gas Field Exploration Services	2823	Cellulosic Manmade Fibers		
1389	Oil and Gas Field Services, Not Elsewhere Classified (NEC)	2824	Manmade Organic Fibers, Except Cellulosic		
<hr/>		Group 283:	Drugs		
Major Group 14. Mining and Quarrying of Nonmetallic Minerals Except Fuels		2833	Medicinal Chemicals and Botanical Products		
Group 145:	Clay Ceramic and Refractory Minerals	2834	Pharmaceutical Preparations		
1459	Kaolin and Ball Clay	2835	In Vitro and In Vivo Diagnostic Substances		
Group 147:	Chemical and Fertilizer Mineral Mining	2836	Biological Products, Except Diagnostic Substance		
1474	Potash, Soda, and Borate Minerals	Group 284	Soap, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations		
1475	Phosphate Rock				
<hr/>		2841	Soap and Other Detergents, Except Specialty Cleaners		
Major Group 20. Food and Kindred Products		2842	Specialty Cleaning, Polishing, and Sanitation Preparations		
Group 207:	Fats and Oil Mills	2843	Surface Active Agents, Finishing Agents, Sulfonated Oils, and Assistants		
2074	Cottonseed Oil Mills	2844	Perfumes, Cosmetics, and Other Toilet Preparations		
2075	Soybean Oil Mills	Group 285	Paints, Varnishes, Lacquers, Enamels, and Allied Products		
2076	Vegetable Oil Mills, Except Corn, Cottonseed, and Soybean	2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products		
2077	Animal and Marine Fats and Oils	Group 286	Industrial Organic Chemicals		
<hr/>		2861	Gum and wood Chemicals		
Major Group 26. Paper and Allied Products		2865	Cyclic Organic Crudes and Intermediates, and Organic Dyes and Pigments		
Group 261:	Pulp Mills	2869	Industrial Organic Chemicals, NEC		
2611	Pulp Mills	Group 287	Agricultural Chemicals		
Group 262:	Paper Mills	2873	Nitrogenous Fertilizers		
2621	Paper Mills	2874	Phosphate Fertilizers		
Group 263:	Paperboard Mills	2879	Pesticides and Agricultural Chemicals, NEC		
2631	Paperboard Mills	Group 289	Miscellaneous Chemical Products		
Group 265:	Paperboard Containers and Boxes	2891	Adhesives and Sealants		
2653	Corrugated and Solid Fiber Boxes	2892	Explosives		
Group 267:	Converted Paper and Paperboard Products, Except Containers and Boxes	2893	Printing Ink		
2672	Coated and Laminated Paper, (NEC)	2895	Carbon Black		

Source: EOP 1987.

- Major Group 10 - Metal Mining includes establishments primarily concerned with mining, developing mines, or exploring for metallic minerals (ores). These ores are valued for the metals contained, to be recovered for use as such or as constituents of alloys, chemicals, pigments or other products.
- Major Group 13 - Oil and Gas Extraction includes establishments primarily engaged in the production of crude petroleum and natural gas, extraction of oil from oil sands and oil shale, production of natural gasoline and cycle condensate, and production of gas and hydrocarbon liquids from coal at the mine site.
- Major Group 26 - Paper and Allied Products includes establishments primarily engaged in the manufacture of pulps from wood and other cellulose fibers and from rags; the manufacture of paper and paperboard; and the manufacture of paper and paperboard into converted products.
- Major Group 28 - Chemicals and Allied Products include establishments producing basic chemicals and establishments manufacturing products by predominantly chemical processes. Major group 28 establishments manufacture three general classes of products: basic chemicals, chemical products to be used in further manufacture, and finished chemical products to be used for ultimate consumption.
- Major Group 29 - Petroleum Refining includes establishments that participate in petroleum refining, petroleum manufacturing, paving and roofing materials, and compounding lubricating oils and greases from purchased materials. Establishments providing gas to consumers are not included in this category, but rather are classified with Public Utilities Industries (Major Group 49).
- Major Group 51 - Wholesale Trade - Nondurable Goods includes establishments primarily engaged in the wholesale distribution of nondurable goods. This group includes the wholesale distribution of plastics materials and of chemicals and allied products, not elsewhere classified.

The major groups identified above and the more detailed 4-digit groups presented in Table I-1 represent the designation of sites that would likely be subject to IUR amendment reporting. However, many factors relate to the nature of these sites, making identification of the regulated community more difficult. For example, SIC codes reflect a site's *primary* activity, omitting substantial participation a company may have in other industry activities. Secondly, SIC codes assigned to parent companies reflect the parent company's primary activity, although many parent companies are primarily holding companies with small subsidiaries. Each of these small subsidiaries may belong in a completely different industry classification based on its own primary activity. Therefore, sites considered to fit into other SIC codes due to their primary activities or to their parent company activities may be subject to this rule. Likewise, sites whose parent companies fit into these SIC codes may not be subject to this rule.

2. Information to be Reported

In addition to the information required under the original IUR, companies reporting under the proposed amendments will be reporting additional information on facility and company identification, chemical use and exposure, and status of CBI claims. In addition to reporting information on their own site, the company will also report estimates of downstream uses and exposures, as well as provide information on commercial and consumer end-uses of a particular chemical. Reported facility and manufacturing information is to be supplied as far as it is known to or reasonably ascertainable by the submitter, and reported processing and use information is to be supplied as far as it is readily obtainable by the submitter. As such, supplying these data elements should not entail a particularly burdensome level of effort (see Box I-4). Furthermore, EPA proposes that some information should be reported in ranges, and that only the majority of the production volume be accounted for when reporting use information. Allowing for reporting in ranges will reduce the potential burden to submitters of developing a precise point estimate of their chemical production, but will provide information that is sufficiently precise for the Agency's risk-screening purposes.

Box I-4. Reporting Processing and Use Information on Chemicals

The regulated community will be expected to provide readily obtainable information on downstream processing and use of subject chemicals. Reporting this information could be straightforward for companies that manufacture a chemical for a single customer for a specific commercial end-use. For example, a small volume, proprietary use chemical (e.g., a specialty adhesive for aerospace applications) might have only one processor, very few users, no consumer use, and a limited exposure profile. By comparison, the nuances associated with distribution of a large volume chemical within and outside of a particular site will place a greater burden on the portion of the regulated community that provides chemicals to a wide range of sites and for a variety of end-uses. An example of this might be a company distributing chemicals for use in various perfumes and fragranced toiletries, thereby reaching hundreds of processing sites. In either case, however, manufacturers and importers are required only to provide information considered to be readily obtainable; therefore, more complicated scenarios should require only a marginally greater effort than small volume, limited use

D. Purpose and Contents of Report

1. Purpose and Scope of Report

This report presents an economic analysis of the costs and benefits associated with the proposed IUR amendments. EPA expects these amendments to have cost impacts for both industry and EPA. In addition, the rule is expected to generate substantial benefits by providing needed screening level information on TSCA chemical substances currently in commerce.

This economic analysis compares the costs and benefits of the proposed regulation. This report also presents an analysis of selected regulatory alternatives. For each alternative, the expected impacts on anticipated costs and benefits are assessed. The following analyses are provided in this report:

- an overview of changes in the reporting requirements;

- an assessment of the industry groups considered in this analysis (i.e., regulated community);
- a compilation and estimation of industry and Agency unit and total costs;
- an assessment of the benefits that will result from the information collected; and
- a comparison of the costs and the benefits of the proposed rule.

This report also discusses the impacts of the proposed amendments on small businesses and addresses other congressional mandates (e.g., Paperwork Reduction Act).

2. Contents of the Report

The contents of the six remaining chapters and five appendices contained in this report are organized as follows:

- Chapter II describes the need for this rulemaking, existing data sources, and regulatory options considered. The statement of need explains the economic reasons for these amendments;
- Chapter III presents original IUR reporting requirements (i.e., the baseline) and quantifies industry and agency costs associated with the original rule. This chapter also presents an analysis of the industry burden expected to result from the implementation of the IUR amendments. This chapter provides a detailed analysis of the incremental costs to industry for complying with requirements for submission of required reports for each of the proposed reporting options relative to the original (baseline) requirements;
- Chapter IV provides estimates of the government costs attributable to additional data collection and processing activities for each of the proposed reporting options relative to costs incurred for original requirements;
- Chapter V qualitatively describes the benefits that will be generated from the collection of additional information under the IUR amendments. This chapter describes how the information will be used by the Agency and how use of this information will generate societal benefits by reducing risks and improving government risk management activities;
- Chapter VI presents a cost-benefit comparison for each of the proposed reporting options;
- Chapter VII provides a discussion of small business impacts and environmental equity considerations;
- Appendix A provides the latest draft version of the Form U, the reporting form for the Inventory Update Rule;
- Appendix B provides information on the types of data that are currently available to EPA, demonstrating the need for further collection of data under the IUR amendments;
- Appendix C presents basic data regarding the number of chemicals, reports, and sites involved in IUR reporting, as well as the methodology used to generate numbers of reports expected to be submitted for each reporting cycle;
- Appendix D describes the survey administered to determine the industry burden of reporting under the original IUR and the proposed IUR amendments and presents an analysis of the survey results; and
- Appendix E provides a sensitivity analysis of several cost assumptions used in determining the industry cost of reporting. The analyzed cost assumptions include the number of chemicals reported per site and the discount rate used to calculate the net present value and annualized costs of the amendments.

CHAPTER II. STATEMENT OF PROBLEM

The production, processing, and use of chemicals can result in negative environmental externalities. (An externality is usually defined as an unintentional side-effect of production and consumption that affects a third party either positively or negatively.) Negative externalities may remain unidentified due to the lack of available information on the hazards of and exposures to chemicals. The market has not provided the public or the government with information on risks associated with chemicals. Because of these externalities, and because the market does not necessarily provide needed information to interested parties, socially suboptimal levels of human health and environmental quality exist.

This chapter describes the underlying problem and market failure that the proposed IUR amendments are designed to address and discusses how the proposed regulatory option addresses the problem. The chapter is divided into two parts. Section A describes the market failure, the need for information, and the manner in which the proposed rule addresses these information needs. Section B discusses alternative approaches, both regulatory and non-regulatory, and summarizes the regulatory options under consideration.

A. Statement of Need

Under Executive Order Number 12866, EPA is required to identify whether or not the proposed rule addresses a significant market failure. The major types of market failure are identified as externality, natural monopoly, market power and inadequate or asymmetric information. This proposed rule uses the information gathering process as a means to develop policies to address a problem of externality.

1. Market Failure: Externalities and the Need for Information

A defining feature of a market failure is the inequality between the social consequences of an action and its purely private perception of benefits and costs. For environmental problems resulting from market failures, this divergence between private and social perspectives is normally called an externality or external cost. Such divergences occur when the actions of one economic entity impose costs on parties that are external to, or not accounted for in, a market transaction or activity. Although many different types of environmental externalities exist, regulations under TSCA and other OPPT

Box II-1. Progress on Screening Chemicals for Risks

Identifying chemical substances, plant sites, and exposures of most concern and setting priorities for more detailed risk assessment and potential risk management actions are important components of a successful chemical risk management program. As indicated in EPA's TSCA Inventory, there are more than 75,000 chemicals in commerce. Screening the potential risks of these chemical substances, and setting priorities for more detailed risk assessment and possible risk management, is an enormous challenge given the extremely large number of manufacturing, processing, and use sites and exposure scenarios. However, of these 75,000 chemicals, EPA has determined that the majority of the chemicals are likely to be of low concern and is focusing attention on the top 10% - 15% of the chemicals.

Additional information is required to adequately assess the risks of these top chemicals (about 10,000 chemicals) on which EPA would like to focus attention. EPA plans to begin screening the top 6,000 of these chemicals and requires additional use and exposure information to adequately screen their risks. Without the additional information EPA may not identify the potential risks posed by these chemicals. If the potential risks are not identified, EPA may not be able to evaluate nor address the risks associated with the chemical or use. In the future, EPA plans to expand this evaluation to include other TSCA chemicals. EPA believes that collecting the slightly augmented facility and manufacturing information for the remaining chemicals provides sufficient information to maintain a profile of the chemical industry and to react to unanticipated risks.

A key benefit of the IUR amendments for these programs will result from the reduction in time required to collect and process data and to develop exposure estimates. Because the process by which chemicals enter and proceed through EPA's risk management programs is hindered by the lack of data on exposure, the risks posed by these chemicals cannot be dealt with efficiently. Therefore, detrimental worker and consumer exposures and releases to the environment cannot be mitigated in a timely manner, resulting in continued negative consequences for human and ecosystem health.

This shortfall was highlighted in a GAO report entitled "*Toxic Substances Control Act: Legislative Changes Could Make the Act More Effective.*" The report states that, in total, EPA has reviewed about 16 percent of the Inventory, either as new or existing chemicals. EPA has been reviewing about 100 existing chemicals per year. (New chemicals are evaluated through the New Chemicals Program prior to becoming part of the Inventory.) At this rate it seems clear that EPA cannot effectively screen and manage chemical risks for the 6,000 chemicals for which there are significant concerns without additional information. Adding the information collected through the proposed IUR amendments provides the information needed by the Agency to determine which chemicals or chemicals and use scenarios are likely to pose significant risks, to determine which chemicals are selected for more detailed analysis, and, ultimately, to determine which

initiatives typically focus on those related to chemical production and use. In this area, exposure of humans and the environment to hazardous substances typically results in market outcomes that are less than optimal. A common example would be a manufacturing process that emits some amount of a chemical while producing or using that chemical. As a result of this activity, environmental and health risks are imposed on its employees, the public at large, and the environment. These risks are created by the manufacturing facility, but it is society (employees and the public) that bears the cost of these risks.

Given the host of substances and potentially risky activities within OPPT's purview, the number of environmental externalities possibly requiring EPA's investigation and intervention is quite large. Because of the diverse character of the chemical industry, its products, and the uses of those products, the first crucial step in remedying market failures is to identify instances in which these externalities are

likely to occur. Thus, identifying situations in which externalities are present—and where the potential risks posed by these externalities are sufficiently large as to warrant further investigation—is a key goal of the chemical screening that EPA performs as part of its risk management activities. In order to improve internalization of environmental externalities, EPA must first identify these risks of concern. Information about exposure is a critical component of this screening. The detailed and accurate information required to identify relevant externalities is not currently available to EPA's risk management process (See Box II-1). The question thus arises: “why does the market fail to provide the information needed to identify these externalities?”

There are several causes of this information void. There is little incentive to provide information, the provision of information is not costless in the real world, and providing the information may have negative consequences for the company by either dissuading customers from purchasing the product or by providing competitors with information. In part, the lack of information is a motivation for the activities that EPA undertakes (examples of the reasons there is a lack of information are discussed in Box II-2 and the text below). EPA's mission is to act in the public's interest, undertaking actions to correct the lack of information, and thereby enable the identification of existing externalities that cause a suboptimal level of protection for the environment and the public.

Box II-2. Reasons for Lack of Information

Negative incentives -- Manufacturers have an incentive not to provide information that highlights the negative characteristics of the product or job for consumers or workers. Such information would lessen the attractiveness of purchasing the product or accepting employment.

Information production/dissemination costs -- The production and dissemination of information has a cost which may or may not be expensive. Someone has to be willing to pay this cost for the information to be made available.

Causation difficult to establish -- Often substantial distance may separate the original polluting event and subsequent human or environmental damage; frequently many possible sources exist. Moreover, often the linkages from a pollution or exposure event may be extremely numerous and hard to trace. For example, the impact of toxics released in one part of a wetland on oceanic aquatic species is difficult to determine. If establishing a chain of causation from the harm to the responsible party and event is hard, the market and even extra-market systems (such as conventional legal remedies) may not adequately address these risks.

Exposures not perceptible -- If exposure to harmful substances are not perceptible when they occur, individuals may have difficulty taking action to ensure that these exposures are adequately reflected in market demands and prices.

Long time lags between exposure and effects -- Long latency periods and other factors that cause harms to occur far after the exposure event can also hinder the market's attempts to establish and enforce responsibility for environmental consequences of some activities.

Market forces encourage the provision of some types of information. For example, consumers and job seekers are able to obtain information on some types of product and job characteristics relatively easily. In particular, producers of products have an incentive to provide information if it encourages a potential consumer of the product to purchase it. Similarly, employers have an incentive to entice potential employees to join by highlighting attractive and safe features of the work environment.

Consumers and

workers can also seek out some types of relevant information that is not readily provided in the market through indirect sources such as consumer magazines and labor unions. However, not all the information that consumers and workers could use to make safety decisions or that EPA needs to determine the existence and magnitude of potential externalities is readily provided by the market.

For example, manufacturers do not have an incentive to provide information that would dissuade consumers from purchasing the product or workers from choosing employment in the manufacturing firm. Such information might be information on the safety characteristics of the product or job. In some cases manufacturers may feel that alerting consumers or workers to such characteristics, even in the context of improvements that have been made or steps that individuals can take to minimize risks, would negatively affect the attractiveness of the product or employment. Thus, they may not have incentives to provide such information, and they may have an incentive not to provide it.

A potential failure to provide adequate information can occur for the simple reason that information may be costly to generate and disseminate. Moreover, there may be economies of scale associated with information provision, interpretation, and use. From society's point of view, the benefits of collecting the information extend beyond one person to all potential consumers of the product or to workers manufacturing the product. Even if information could be collected, it may not be in any individual's best interest to do so. Thus, government's role (in this case EPA's) is to collect and maintain this information, and to interpret it in order to identify the externalities and determine if action is warranted to protect the public's interest

2. Data Required to Conduct Risk Screening and Management

Currently, the process of collecting information on chemical effects and exposures to support risk management actions is a resource-intensive and time-consuming process. EPA's ability to

improve priority setting and resource allocation activities is dependent on the availability of exposure data that is not currently collected on a comprehensive basis. Consequently, the primary goal of this rule is to enhance the quality and quantity of information about chemical uses and exposures that EPA may use to identify risks under TSCA, with the ultimate goal of protecting the public.

To fully assess human exposure to a chemical, EPA needs to know how many workers, consumers, and others are exposed, the mechanism through which exposure occurs, and the amount and duration of exposures. The Agency has systematically defined the components of exposure assessment in its Guidelines for Exposure Assessment, which discuss the information requirements for several different approaches to exposure assessment, ranging from initial risk screening to full-scale risk assessments (U.S. EPA 1992). Specific data needs include:

- Estimates of the number of workers potentially exposed to specific chemicals;
- Information on whether a chemical substance is used in consumer products;
- Information on frequency and duration of exposure or time-of-contact;
- Information to enable EPA to sort and screen information by industry sector;
- Information on the industrial function of a chemical substance; and
- Standard facility identifiers to allow linkages of data with other sources of information.

Table II-1 below lists the three components of risk assessment, examples of variables affecting these components, and specific exposure-related data elements to be collected under the amended IUR for initial screening assessments. These data elements provide a variety of useful information for estimating potential exposures. For example, industrial process and use activity, production volume, function code, and industry sector information can aid in the determination of the frequency, magnitude, and duration of potential worker exposures. Similarly, consumer use information and the number of chemical processing and manufacturing sites will provide information on the nature and size of the general population that may potentially be exposed.

Table II-1. Components of Exposure Assessments and Exposure-Related Data Elements

Component of Exposure Assessments^a	Examples of Variables Effecting Component for Exposure Assessments	Exposure-Related Screening Data Elements in IUR Amendments
Source and concentration of chemical substances	<ul style="list-style-type: none"> •Industrial process/use activity •Unit operations •Process type •Industry practices •Industrial function •Application methods •Throughput rates •Use concentrations •Physical and chemical properties •Efficiency •Control technologies •Treatment and disposal options •Ventilation design •Use of personal protective equipment •Regulations 	<ul style="list-style-type: none"> •Production volume •Industrial process/use activities and volumes •Industry sectors •Industrial chemical function •Physical form •Maximum concentration
Population and receptor information	<ul style="list-style-type: none"> •Number of workers •Size of general population exposed (consumer products are assumed to have widespread potential exposures) •Time-activity patterns •Physical characteristics •Age 	<ul style="list-style-type: none"> •Number of workers •Number of sites •Consumer use information
Frequency and duration of exposure or time-of-contact	<ul style="list-style-type: none"> •Default values are typically used (i.e. 250 days/yr, 8 hrs/day for workers) 	Default values (not collected)

^a Source: U.S. EPA 1992

3. Existing Data Sources and Data Gaps

The specific information that OPPT needs to provide more accurate preliminary screens of chemicals in commerce, to identify chemicals of concern, to identify potentially safer substitute chemicals, and to properly allocate resources and set priorities for its programs is currently not available (see Box II-3). Currently, chemical data collection efforts occurring within various EPA offices do not systematically or comprehensively collect chemical use and/or worker exposure data. The information collected by these EPA offices is described in Appendix B.

Additionally, chemical information is collected at the state level to support a variety of state and federal programs and regulations, including EPCRA, state Right-to-Know programs, state permitting requirements, and other state programs. According to EPA regional offices and state environmental

Box II-3. Risk Screening Activities Lack Important Data on Exposure

Currently, EPA often must conduct its screening activities based on assumed conditions, outdated information, or incomplete data sets. For instance, EPA's major source of data on the number of workers exposed is the National Occupational Exposure Survey conducted by the National Institute for Occupational Safety and Health in the early 1980s. This survey contains estimates of the number of workers exposed nationally to over 10,000 chemicals. It also contains data such as the number of sites at which a chemical is manufactured or used. Although EPA officials recognize that the survey is old and probably outdated, it is often the only available data on the number of workers exposed to a particular chemical.

Exposure assessments can also be conducted using data on chemical release such as those provided by the TRI. However, few release data are available for chemicals not included in the TRI, which contains estimates of annual releases to the air, water, and land for only about 600 chemicals. Many other potentially harmful chemicals are produced in large quantities. Even for the TRI chemicals, information such as the numbers of workers potentially exposed, the functions of the chemical, and the uses of the chemical is often not available. Considering the diversity of release sources, the large number of associated parameters, and the limited availability of existing data, the effort needed to perform an exposure assessment for thousands of

agencies, chemical use and worker exposure information generally is not collected at the state level (Codina 1996, Layne 1996, Fried 1996, Browning 1996, Hope 1996, Larmee 1996). For example, under EPCRA §311 and §312, states collect data on the maximum and average amount of a chemical on-site for the purposes of emergency response planning. Information on total annual volume, function of the chemical, or use of the chemical, however, is not available from this source.

Although several states and other federal agencies have or are developing programs to collect information related to chemical manufacturing, processing, storage, and distribution (OSPIRG 1993), the information typically is used to support waste reduction programs and/or emergency management plans and is not designed to rank chemical exposure and use concerns at the manufacturing level. None of these groups collect the data needed to effectively conduct chemical risk screening at the national level. Information on these programs is provided in Appendix B.

The available commercial data sources characterizing chemical use are generally not comprehensive in nature. Such data sources include the following:

- chemical industry journals, such as *Chemical and Engineering News* and the *Chemical Marketing Reporter*;
- chemical and business directories, including the *Directory of Chemical Produces* and the *Thomas Register*;
- chemical reference documents, including the *Kirk-Othmer Encyclopedia of Chemical Technology*, *SRI International's Chemical Economics Handbook*, the *Freedonia Market Research* database, and the *Frost & Sullivan Market Intelligence* database; and

- publications from chemical trade associations, such as the Chemical Manufacturers Association, and the American Chemical Society.

These sources are sometimes useful for characterizing production volume, use categories, physical form, and chemical function information. For instance, once EPA has determined that a particular chemical has a high potential risk, EPA searches these data sources for information on the chemical. However, these data sources do not provide information useful for screening large numbers of chemicals. Some of these sources provide only general chemical information that cannot be used to determine production and use at the plant level. Other sources only specify production and use information for particular companies, and do not provide data on industry-wide chemical production. These sources typically lack useful information on potential worker and consumer exposures. Further information on these sources can be found in the EPA report *A Review of Existing Exposure-Related Data Sources and Approaches to Screening Chemicals: A Response to CMA* (U.S. EPA 1998a).

Overall, it has become increasingly evident that the information routinely made available to EPA through the available sources falls short of the information needed to identify potential risks swiftly and accurately. In particular, the Inventory and Inventory Update process provides very limited information – only the volume of production – to screen chemicals for exposure risks. However, actual human health and other risks posed by a chemical depend critically on its uses and other exposure scenarios. Without such data, EPA cannot adequately or accurately predict the magnitude and nature of ecosystems and human populations potentially exposed; the concentrations, frequency, and duration of exposures; and a host of other specific factors related to potential chemical exposures.

4. Current Risk Screening Approach

To implement its responsibilities for managing chemical risks under TSCA, EPA identifies or screens potential chemical risks, assesses identified potential risks in more detail, and, if necessary, manages risks determined to be unreasonable. There are tens of thousands of chemicals in use and many ways that exposures can occur. OPPT's past approaches to chemical risk screening have been primarily based on relative chemical hazard, coupled with IUR production volume data. This approach, used because large scale, national level data on worker and consumer use and exposure are generally not available, has proven inadequate for screening the large number of chemicals in commerce.

EPA uses the chemical hazard/production volume approach, among others, to initially screen many chemical substances for potential risks to select candidate chemicals for inclusion in its Existing Chemical review program (see Box II-4). Other approaches include recommendations from the Interagency Testing Committee (ITC), the European Union, States, or environmental groups. The initial screening is designed to select chemical substances in commerce that appear to present the greatest potential risk to human health and the environment. At the close of the review, there are three possible outcomes: a testing recommendation, a recommendation for further evaluation, or closure. "Closure" may include referrals to other programs or agencies; dissemination of screening results; or the decision to discontinue further evaluation based on the chemical substance's low hazard or low risk reduction potential, or because it will be considered as part of a broader cluster of chemical substances.

Box II-4. Current Existing Chemical Review Process

Since there is no adequate current system available for screening all of the chemicals in commerce, EPA relies on various methods to determine which chemicals enter the existing chemical review process, including referrals from the European Union, the Interagency Testing Committee (ITC), state agencies, and environmental groups. Once a chemical or group of chemicals is determined to have a potential for risk, the chemical enters the existing chemical review process. The existing chemical review process typically takes from 12 to 16 weeks and requires about 100 staff hours per chemical, although the required level of effort to complete the process may vary. Despite EPA's attempts to prioritize chemical review efforts according to the potential for risk, under the current system there is no guarantee that those chemicals chosen for review necessarily pose the greatest risk. The proposed changes to the IUR would provide EPA with more information to effectively determine which chemicals pose the greatest potential for risk.

During the review process, the Agency searches its files and public data bases for information on the chemical's effects, physical properties, production volumes, manufacturing processes, uses, releases to the environment, and other data, such as the number of workers exposed to the chemical. Because limited information is generally available, EPA uses various computer models to estimate or project certain data, such as the amounts and types of environmental releases. A further complication is that a chemical may have various potential health and environmental effects that EPA needs to consider in evaluating its risks. In addition, chemicals often have multiple uses, each of which needs to be examined to determine the amount of exposure (GAO 1994).

5. Advantages of the New Information Collection

The need for EPA to properly allocate resources and set priorities for its programs has been widely recognized and documented. Two reports, the EPA Science Advisory Board's "Reducing Risk: Setting Priorities and Strategies for Environmental Protection" and the National Academy of Public Administration's "Setting Priorities, Getting Results, A New Direction for EPA" recognize that EPA's ability to improve its priority setting and resource allocation activities has been limited by the lack of exposure data. By collecting the exposure-related data included in the proposed IUR amendments,

the Agency would acquire the necessary information to improve identification, prioritization, and chemical risk screening capabilities.

EPA recognizes that production volume information, supplemented by relatively scarce public sources of information, generally is not sufficient for identifying chemical exposures and human risks. This recognition motivates the revised and more detailed data collection proposed under the IUR amendments. EPA anticipates that the collection of additional use and exposure information, when combined with hazard data, will provide the means to develop a better risk-based screening mechanism that will benefit workers, consumers, the general population, and the environment.

The primary goal of this rule is to enhance the quality and quantity of information about chemical uses and exposures that EPA may use to identify risks under TSCA and to protect and inform the public. The information proposed to be collected under the IUR amendments will enable EPA to evaluate the potential risks associated with chemical production and use, and will improve EPA's consequent ability to conduct risk management activities (especially screening), in a more comprehensive and timely manner. It will also enable EPA to be knowledgeable about a wider variety of chemicals and to be proactive, rather than reactive, in identifying risks.

B. Approaches to Regulation and Options for Collecting Information

This section provides information on regulatory approaches and options considered for collecting information necessary to EPA's risk management programs under TSCA. The first subsection presents the approaches considered for implementation of the information collection. The second subsection presents specific details on the levels of information required under different regulatory options.

1. Approaches to Regulation

In the case of a significant market failure, public intervention is often required to override the market directly or to configure market incentives to achieve a more socially efficient outcome. Several alternative approaches are available to address market failures and thereby correct the results of environmental externalities. These fall into three broad categories: command-and-control approaches, incentive-based strategies, and information-based remedies. In addition, EPA may choose

to take no regulatory action in response to market failures, if it is determined that failures are not significant or if costs of the action overwhelm benefits.

Command and control approaches are the most specific forms of regulation. Command and control approaches addressing environmental problems include product or process bans and controls, standards for the manner in which a chemical may be manufactured or used, and other measures directly mandated by EPA or other environmental authorities. Incentive-based strategies seek to alter the incentives of private sector market participants to consider environmental externalities in decision making. This is accomplished by changing price or cost conditions related to polluting- or risk-generating activities. Incentive-based strategies include charges, subsidies, tradeable permit systems, financial assurance, and other market-related mechanisms. Information-based strategies are the third general class of approaches for addressing environmental risks to human health and the environment. These strategies seek to alter decisions indirectly by improving the information base upon which those decisions are made.

The relative efficacy of each approach for addressing market failures depends on the specific circumstances surrounding different risk and pollution problems. Sometimes, outright product or process bans, mandatory exposure controls, or other direct interventions might best achieve the goal of improved environmental protection and maximizing net benefits. In others, economic incentive-based strategies might do better, especially when a substantial variation in the costs of pollution control exists across many sources.

The issues of concern here are best suited to information-related remedies, such as the information provision required by the IUR amendments. The other regulatory remedies focus on controlling specific sources of risk, and would normally come into play after a particular risk management problem has been identified. The IUR amendments, however, are focused on collecting data which will allow EPA to identify instances of potential market failures and environmental externalities. Thus, the goal is to supplement EPA's current chemical risk management strategies by enhancing the volume and detail of information available to EPA concerning chemical characteristics, uses, and exposures.

Clearly, improved information on chemical exposure will allow EPA to more effectively and accurately identify and initially assess the extent of market failures and the resulting externalities

associated with chemical exposures and risks. In addition, information disseminated to chemical producers, consumers, and the public will help to achieve more efficient solutions to risk management problems specific to their particular circumstances.

EPA also has the option of taking no regulatory action. Under a “no-action” approach, EPA would continue to rely on production volume information and public data sources to screen human health and other risks. However, EPA believes that the relatively scarce body of information currently available is not sufficient to accurately identify chemical exposures and risks, and hence, that some regulatory action is required.

One alternative to a mandatory information collection rule might be a voluntary survey approach under which the added information targeted under the IUR amendments would be collected on a non-mandatory basis. This would entail EPA sending a survey to all or some portion of chemical manufacturers and allowing the manufacturers to decide what information to include in the response.

However, despite the apparent advantages of a purely voluntary data reporting program, the value of the additional information provided to EPA would be far lower compared with a mandatory information collection program. In particular, no clear way would exist to determine the extent to which responses span the entire universe of relevant chemicals and their uses, so data gaps of perhaps substantial proportions would continue to exist. Moreover, uncompleted surveys might not be random in the sense that risks may be higher for chemicals and uses for which surveys are not returned. Finally, EPA would not have a systematic method to ensure quality control and timeliness of the survey responses. Because of these shortcomings, this voluntary survey alternative is unlikely to produce the volume, scope, and detail of information ultimately required by EPA.

2. Regulatory Options -- Levels of Information Collected

The Agency has considered various regulatory options that would alter the scope of coverage under the IUR reporting requirements. Three basic parameters for the options are reporting thresholds, exemptions based on type of chemical, and reporting cycles. Within the reporting threshold parameter, two categories of reporting thresholds are used in the proposed IUR amendments; the two reporting thresholds determine submission of facility and manufacturing data and submission of use and exposure data, respectively. The options are summarized below and presented in detail in Table II-2. Note that these are the differences between the options and do not represent all of the changes from

the baseline. The first 10 options are based on different reporting thresholds and a four-year reporting cycle.

- *Option 4* is the proposed Option and sets the reporting threshold at 25,000 pounds for facility and manufacturing data and 100,000 pounds for processing and use data. Manufacturers of most petroleum streams will be exempt from reporting processing and use information.
- *Options 1-3 and 5-8* vary the thresholds for both facility and manufacturing data and for processing and use data.
- *Option 9* contains a staged threshold for processing and use information; the threshold for the first year of reporting is 500,000 pounds and for subsequent reporting years is 100,000 pounds. This option retains the 25,000 pound threshold for facility and manufacturing information.
- *Option 10* assumes the reporting thresholds are the same as those in the proposed option, and includes an exemption from all reporting requirements for site-limited petroleum stream chemicals rather than the petroleum stream partial exemption in the proposed option.
- *Option 11* requires the reporting thresholds used in *Option 4*, but this option examines the continued exemption of inorganic chemicals under the proposed IUR amendments.
- *Options 12-14* vary the reporting cycle. *Option 12* assumes a two year reporting cycle for facility and manufacturing information and four years for processing and use information. *Option 13* uses a two year reporting cycle for all information, while *Option 14* uses one-time reporting .

Table II-2. Options for the Proposed IUR Amendments

Option #	Thresholds		Reporting Cycles		New Exemptions	
	Facility and Manufacturing Information	Processing and Use Information	Facility and Manufacturing Information	Processing and Use Information	Facility and Manufacturing Information	Processing and Use Information ^a
Proposed Option						
4	25,000 lb	100,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
Alternate Threshold Options						
1	10,000 lb	10,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
2	25,000 lb	25,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
3	10,000 lb	100,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
5	10,000 lb	500,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
6	25,000 lb	500,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
7	25,000 lb	1,000,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
8	25,000 lb	10,000,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
9	25,000 lb	500,000 lb/ 100,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
Reporting Exemption Option						
10	25,000 lb	100,000 lb	4 yrs.	4 yrs.	Site-Limited Petroleum Streams	
11	25,000 lb	100,000 lb	4 yrs.	4 yrs.	Inorganic Chemicals	
					----	Partial Exemption Chemicals
Reporting Cycle Options						
12	25,000 lb	100,000 lb	2 yrs.	4 yrs.	----	Partial Exemption Chemicals
13	25,000 lb	100,000 lb	2 yrs.	2 yrs.	----	Partial Exemption Chemicals
14	25,000 lb	100,000 lb	one-time	one-time	----	Partial Exemption Chemicals

^a Partial exemption chemicals currently include only petroleum stream chemicals.

CHAPTER III. INDUSTRY COSTS OF THE PROPOSAL

This chapter analyzes the costs to industry associated with the original Inventory Update Rule (IUR) and EPA's proposed IUR amendments. This chapter is organized as follows:

- Section A presents an overview of the approach used to determine industry costs, including the determination of tasks required to comply, the development of unit costs of compliance, the determination of the number of forms and reports, and the development of the total costs of compliance.
- Section B discusses the costs associated with the original IUR, defined as the “baseline” costs. This section also presents the reporting requirements and exemptions and the number of submissions under the original IUR.
- Section C outlines the requirements and costs under the proposed IUR amendments. Both incremental and total costs for the first and future years of the amended rule are presented. The incremental cost is defined as the difference between the original and proposed IUR, and the total cost is defined as the overall cost of compliance to industry under the amended IUR (the sum of the baseline cost and incremental cost).
- Section D presents an overview of the proposed threshold and reporting cycle options, the estimated costs associated with each option, and the sensitivity analysis. This section also discusses issues of uncertainty and limitations that affect the quantified costs.

A. Overview and Methodology

The general methodology employed for estimating the costs to industry of the original IUR and the proposed IUR amendments is described below. The expected costs include those attributable to compliance determination, rule familiarization, preparation and submission of forms, and recordkeeping. The following methodology was used:

- Step 1: Identify the tasks that sites perform to comply with reporting requirements for both the original IUR and for the proposal;
- Step 2: Determine the unit costs for all activities identified in Step 1, based on requirements for managerial, technical, and clerical labor hours;
- Step 3: Determine the number of forms and reports filed under the original IUR and the number expected to be reported under the proposed amendments; and
- Step 4: Determine the estimated total costs of compliance for the original and the amended IUR and calculate incremental costs.

1. Determination of Tasks

Compliance with the original IUR and with the proposed amendments requires the completion of certain steps. These steps can be broken down into compliance determination, rule familiarization, preparation and submission of reports, and recordkeeping. The amount of effort (and therefore cost) required for each of these steps varies depending upon the type of chemical, company size, and the variety of uses of the chemical. The steps for compliance with the original IUR and the proposed amendments are described below. A detailed comparison of the information required under the original rule with that required under the amendments is provided in Section A.5 of this chapter.

- Compliance Determination -- For chemicals produced at or imported through a site, a determination of the need for compliance must be completed, by ascertaining the following information for each chemical produced or imported at a particular site: (1) does the chemical being manufactured or imported meet the requirements under any exemptions, (2) is the annual production or import volume above the reporting threshold, and (3) does the site's parent company meet the small business criteria as set forth in the TSCA §8(a) Small Manufacturer Exemption Rule (40 CFR 704.3)?¹⁰
- Rule Familiarization -- Once the need for compliance has been determined, sites must familiarize themselves with the rule. Sites that previously reported must become familiar with new requirements and sites new to reporting must become familiar with all requirements. This entails reading the rule, understanding the various reporting and administrative requirements, and determining the manner in which the reporting requirements will be met. The proposal adds exposure-related information to the original reporting requirements, changes the reporting cycle, and amends certain other parts of the rule.
- Preparation and Submission of Reports -- Once a site has determined that its chemical output must be reported and has become familiar with the rule, the required information must be collected and a Form U must be completed, reviewed, and submitted to EPA. New requirements, including chemical use and exposure information, up-front substantiation for plant site identification CBI claims, and reassertion of previous CBI claims, are included in this task.
- Recordkeeping -- Under the proposal, submitters must retain records for 5 years.

¹⁰ The burden of compliance determination for chemicals produced in quantities less than 25,000 pounds is assumed to be zero. Although chemicals produced in volumes close to this threshold may also require staff time to determine whether compliance with the rule is necessary, the cost associated with this time is expected to be minimal, and is therefore not considered in the quantified cost estimates. Furthermore, because this is a site-based cost rather than a report or chemical cost, the number of sites not captured would be low.

2. Development of Unit Costs

To calculate costs of compliance associated with these amendments, it is necessary to estimate both the costs associated with original requirements and costs anticipated when the proposed IUR amendments would go into effect. Unit costs of reporting for both the proposed IUR amendments and the original IUR were developed based on estimates of the wage rates and labor requirements, by labor category, for various activities.

- Estimates of Wage Rates: Estimates for wage rates were developed for clerical, technical, and managerial staff. A more detailed description of the analysis by which these estimates were developed is presented below.
- Estimates of Labor Hours: Estimates of labor hours were divided among clerical, technical, and managerial staff for each task described above. The methodology for developing labor hour estimates is presented below. Actual estimates are developed later in this chapter.

This section presents first the estimates of wage rates for employment categories followed by estimates of labor hours for each of the listed activities. The labor hours, when combined with the labor rates, result in an average basic cost of information for each activity. This analysis assumes that all industry compliance costs are incurred in the year in which reporting occurs.

a. Estimates of Wage Rates

Standard wage rates for managerial, technical, and clerical levels were developed from information published by the Bureau of Labor Statistics (BLS) and an analysis adopted from the *Economic Analysis of the Final Rule to Add Certain Industry Groups to EPCRA Section 313* (U.S. EPA 1997a). Data used to develop basic wage rates were derived from 1993 salary information published by BLS for all goods-producing, private industries. Four BLS occupation categories were analyzed: Engineers, Accountants, Attorneys, and Secretaries.

As presented in Table III-1, the managerial and technical level composite salaries used for the analysis are composites of the BLS average salaries for several occupation categories and levels. Weighting factors were applied to the average salaries for each of the occupation categories within the managerial and technical labor categories to develop the composite salary. The weighting factors were based on information provided by the chemical industry and chemical industry trade associations for the typical fraction of total reporting effort that is accounted for by each specific BLS occupation category (U.S. EPA 1997a).

The 1993 composite annual salary estimates were adjusted to first-quarter 1997 dollars using the Employment Cost Index (ECI) for white-collar occupations in private industries. The 1997 adjusted, composite salaries for the managerial, technical, and clerical labor categories were then multiplied by benefits and overhead factors to estimate 1997 loaded, annual salaries. Detailed benefits data for white-collar occupations in private, goods-producing industries were used to account for the additional cost of benefits for managerial, technical, and clerical labor. The overhead factor of 17 percent is based on information provided by the chemical industry and chemical industry trade associations. The loaded annual salary was then divided by 2,080 hours (i.e., the average annual number of hours worked per year by a full-time employee) to derive the loaded, hourly wage rates used in this analysis for each labor category.

Table III-1. Loaded Hourly Wage Rates by Labor Category

Labor Category	Occupation (levels)	Average Salary (\$1993)	Weighting Factor	Comp. Salary ^a (\$1993)	ECI Ratio 6/93:3/97 ^b	Adjusted Salary (\$1997)	1997 Benefits (% Salary)	1997 Overhead (% Salary)	Loaded Annual Salary (\$1997)	Loaded Hourly Rate (\$1997)
Managerial	Engineer (6-8)	\$93,981	10/17	\$55,283						
	Attorney (4-6)	\$111,263	5/17	\$32,724						
	Account (5-6)	\$73,528	2/17	\$8,650						
	Composite		17/17	\$96,658	1.136	\$109,803	37.6	17.0	\$169,756	\$81.61
Technical	Engineer (3-8)	\$74,802	5/6	\$62,335						
	Account.(3-6)	\$59,436	1/6	\$9,906						
	Composite		6/6	\$72,241	1.11	\$80,188	37.4	17.0	\$123,810	\$59.52
Clerical	Sec. (1-5)	\$28,850	1/1	\$28,850						
	Composite		1/1	\$28,850	1.12	\$32,312	39.6	17.0	\$50,601	\$24.33

^a 1993 Composite Salaries are determined by multiplying average salaries by the weighting factor and summing across occupations.

^b The ECI ratio measures the percent change in wages, salaries and employee benefits between June 1993 and March 1997, controlling for inflation.

Sources: U.S. EPA 1997a, BLS 1997.

b. Methodology for Estimates of Labor Hours and Associated Costs

Estimates of the industry reporting burden developed for compliance determination, rule familiarization, report preparation and submission, and recordkeeping were based on previously prepared economic analyses and new EPA estimates. New estimates were developed in cases where previously prepared data did not accurately reflect the specific reporting requirements contained in the proposal. The procedures used to develop the industry reporting burden estimates are as follows:

- review comparable reporting requirements for other rules;
- develop assumptions concerning the relationship between previous industry reporting burden estimates and the IUR amendments reporting requirements and adjust the estimates accordingly;
- develop new estimates as necessary; and
- present the total burden estimates (by staff level) for each task associated with the proposed and original reporting requirements. Note that the analysis of burden is segmented between organic chemicals, partially exempt chemicals, and inorganic chemicals to indicate the differential impact of the changes to the IUR on the reporting requirements for each chemical type and production level threshold.

3. Determination of Number of Forms and Reports

Currently, about 8,800 chemicals are reportable under the original Inventory Update Rule (CUS Database 1997). In 1994, more than 25,000 submissions were received during the IUR reporting cycle. The reporting instrument for the IUR is the Form U. Each reporting site files one Form U, regardless of the number of reportable chemicals it manufactures or imports. Information such as site and company identification are common to all chemicals produced at a single site, and therefore this information need only be reported one time on Form U. Contained within the Form U are any number of individual chemical reports. The site prepares a report for each subject chemical produced at or imported through the site. If there are multiple chemicals produced at a single site, multiple reports are prepared, and the reports are submitted together on one Form U. EPA therefore estimated some costs on a per report basis and some on a per site basis. Per report costs are those costs which are incurred through completion of the individual reports for each reportable chemical. Per site costs are those which are incurred one time for each site through completion of the Form U.

Costs associated with rule compliance are either site- or report-based. Each site must determine whether it must comply with the IUR and then must familiarize itself with the requirements of the rules. The costs associated with these tasks are calculated as per site. For each reportable chemical, a report must be prepared and submitted and a record of it must be kept, therefore the costs associated with these tasks are calculated as per report.

Estimates of the total number of reports expected under the proposed IUR Amendments were determined using data compiled from EPA's Chemical Update System (CUS) and EPA's Chemicals in Commerce Information System (CICIS). The CUS databases contain information collected under the IUR for the 1986, 1990, and 1994 reporting cycles, and were used to generate estimates of expected reports for organic chemicals and petroleum stream chemicals. The CICIS database was used to determine the number of inorganic chemicals likely to be reported, because these chemicals are currently exempt and therefore are not included in the CUS. The CICIS contains information collected by EPA on TSCA chemicals in commerce in the United States in 1977, including company and chemical identification, site location, manufactured or imported status, and production volume in ranges. Appendix C contains a detailed description of the analysis used to determine the expected number of reports under the proposed amendments.

4. Determination of Total Costs of Compliance

The total industry cost of reporting under both the original IUR and proposed amendments is calculated by first determining the unit cost for each task involved in reporting and then multiplying those unit costs by the number of occurrences (i.e, reporting forms submitted or number of sites submitting reporting forms under the IUR). The costs associated with reporting under both the original IUR and proposed amendments consist of (1) compliance determination, (2) rule familiarization, (3) preparation and submission of reports, including CBI determination and substantiation, and (4) recordkeeping.

5. Development of Burden Estimates

The baseline, total, and incremental costs of the IUR were developed through an analysis and comparison of the type of information required for compliance with both the original and

amended rule, as detailed in Box III-1.¹¹ The time required by industry to prepare and submit information for each of these data elements provides a basis for determining the total cost of reporting. To examine this issue, the Agency developed a survey to assess the labor hours required to complete each section of the proposed Form U. The survey was administered to 81 chemical manufacturers in the spring/summer of 1996.¹² Table III-2 presents the estimates of reporting burden for each section of the revised Form U (see Appendix A) as determined from the survey (see Appendix D). Requirements of the original Form U are represented by the shaded areas of the table. The unshaded portion of Table III-2 represents the parts of Form U added by the proposal. For chemicals produced between 25,000 and 100,000 pounds and for chemicals meeting the partial exemptions, only sections I, II, and IV of the revised Form U would be completed.

¹¹ These data elements are discussed in more detail in Chapter I, Section B.

¹² The contents, administration, and results of the survey are described in detail in Appendix D.

Box III-1.
Comparison of Data Elements for Completion of the Original and Amended Form U

Baseline Data Elements

Additions from Proposal

Certification

- signature
- date
- name and title of the representative responsible for the accuracy of the information provided.

Company Information

- technical company name
- contact name
- company street address
- telephone number

Plant Site Identification

- plant site name
- Dun & Bradstreet Number
- plant site street address

Chemical Specific Information

- CAS Number or other identifying number
- ID code
- chemical name
- site-limited status (yes or no)
- activity (manufacturing or import)
- production volume

Confidential Business Information

- up-front substantiation for chemical identity CBI claims
- substantiation of CBI claims in the event of a Freedom of Information Act (FOIA) request

Table III-2. Estimate of Industry Reporting Burden for Sections of Revised Form U (hours)

Task	Clerical Hours	Technical Hours	Managerial Hours
I. Facility Identification Information^a	0.57 - 1.03	0.95 - 1.03	1.03 - 1.10
1. Certification	0.46 - 0.89	0.81 - 0.89	0.97 - 1.05
2. Company Information			
Company Name, Contact, Address	0.03 - 0.04	0.04 - 0.04	0.02 - 0.02
D & B Number, Mailing Address			
3. Plant Site Identification	0.08 - 0.10	0.10 - 0.11	0.04 - 0.04
Plant Name, D & B Number, Address			
EPA ID Number, Mailing Address			
II. Manufacturing Information	1.36 - 1.41	6.03 - 9.63	1.79 - 4.68
1. Chemical Identification	0.49 - 0.55	1.97 - 2.59	0.28 - 0.84
2. Site Limited			
3. Activity			
4. Production Volume (lbs)			
5. Chemical Identification Up-front CBI Substantiation	0.26 - 0.26	1.08 - 1.82	0.48 - 1.05
6. Plant Site Up-front CBI Substantiation	0.12 - 0.12	0.54 - 1.12	0.23 - 0.79
7. Production Volume Range CBI	0.14 - 0.14	0.49 - 1.09	0.24 - 0.85
8. Total Number of Workers	0.21 - 0.21	1.13 - 1.73	0.29 - 0.88
9. Physical State ^b	--	--	--
10. Maximum Concentration	0.14 - 0.14	0.82 - 1.28	0.27 - 0.27
III. Processing and Use Information	3.29 - 3.43	21.11 - 23.12	6.08 - 6.48
A. Industrial Processing and Use Exposure Related Data	2.58 - 2.72	16.22 - 17.69	4.61 - 4.89
1. Determination of Applicability	0.21 - 0.21	1.71 - 1.83	0.45 - 0.45
2. Process and Use Code ^c	--	--	--
3. 5-Digit NAICS Code ^d	0.33 - 0.39	2.17 - 2.32	0.61 - 0.61
4. Function Code	0.35 - 0.35	1.53 - 1.72	0.77 - 0.79
5. Percent Production Volume	0.45 - 0.45	3.34 - 3.63	0.81 - 0.95
6. Total number of processing and use sites	0.54 - 0.60	2.85 - 3.22	0.88 - 0.91
7. Total number of potentially exposed workers	0.71 - 0.73	4.64 - 4.97	1.09 - 1.17
B. Commercial and Consumer End-Use Exposure Related Data	0.71 - 0.71	4.89 - 5.43	1.47 - 1.59
1. Determination of Applicability	0.17 - 0.17	1.07 - 1.13	0.28 - 0.31
2. Identification of end-use	0.17 - 0.17	0.92 - 1.05	0.28 - 0.30
3. Percent production volume	0.24 - 0.24	1.40 - 1.56	0.51 - 0.55
4. Estimated weight percent in consumer	0.13 - 0.13	1.51 - 1.69	0.39 - 0.42
IV. Reassertion of Past CBI Claims^e	0.50 - 1.00	1.00 - 2.00	2.00 - 4.00

Note: 1. Shaded area represents original requirements; the unshaded area represents the proposed additional requirements.

2. The sum of the components under a particular information category may not add due to rounding.

^a The burden associated with determining Facility Identification Information has been adjusted to account for the additional information required under the proposed amendments. The baseline burden associated with providing Facility Identification Information is presented in Table III-5.

^b The burden associated with determining the physical state of manufactured chemicals was subsumed under the task of determining chemical identification (Task II(1)) in the industry survey.

^c The burden associated with determining the Process and Use Code was subsumed under the task of determining the total number of processing and use sites and potentially exposed workers (Tasks III(I.e) and (I.f)) in the industry survey.

^d The SIC system has recently been replaced with the North American Industry Classification System (NAICS). The IUR survey and the cost information developed in this report are based on requirements for providing SIC information. For purposes of this analysis, it has been assumed that the burden associated with providing an NAICS identification number would be the same as for providing an SIC code.

^e See discussion in Section C.3.b.

Sources: U.S. EPA 1994, Appendix D.

Survey respondents provided low and high estimates of labor hours required to complete each task for each of three staff levels. These estimates were then weighted, based on company size, to provide an average low and high burden estimate that would reflect the range of companies expected to report under the proposed amendments. The estimates in Table III-2 are the foundation of the estimates of baseline, total, and incremental costs of the proposal. These costs are presented in Sections B and C of this chapter. A sensitivity analysis is discussed in Section D.

B. Baseline Costs of Compliance

The costs of compliance under the original IUR requirements are estimated in this section. Original reporting requirements, exemptions, and number of submissions received are presented. Industry baseline costs by category for compliance with the requirements of the rule are determined. Compliance determination (per site), rule familiarization (per site), report preparation and submission (per report), and recordkeeping (per report) costs are presented. These costs are then combined with the numbers of reports and sites to estimate the per year, net present value, and annual baseline costs by chemical type (i.e., organic, inorganic, and partial exemption chemicals).

1. Original Inventory Update Rule Requirements

The original IUR requires chemical manufacturers and importers to submit information on certain chemical substances listed on the TSCA Chemical Substances Inventory. Companies must submit a report every four years and maintain records that support their submission for four years following the reporting year. The requirements and exemptions of the original IUR are detailed below.

a. Original Reporting Requirements

The IUR requires manufacturers and importers of subject chemicals to report data on production volume, plant site and chemical identification, and site-limited status for the subject chemicals. These data are reported on a four year reporting cycle and should reflect manufacturing and importing activities over the last complete corporate fiscal year preceding the reporting year.

b. Original Exemptions

The TSCA Inventory includes approximately 75,000 substances, but exemptions and reporting thresholds reduce the number of TSCA chemicals reportable under the

original IUR to about 8,800 discrete chemicals. The specific exemptions to the original IUR are briefly described below.

i. Low-Volume Threshold Exemption

Chemicals produced at a manufacturing site in a volume less than 10,000 pounds during the last corporate fiscal year preceding the reporting period are exempt from reporting under the original IUR. This reporting threshold applies equally to importers and refers to a single site that contains an operating unit responsible for the import.

ii. Small Business Exemption

Small businesses, as defined by TSCA § 8(a), are exempt from reporting under the original IUR requirements. Small businesses are those whose annual sales are less than \$40 million and whose annual production volume is less than 100,000 pounds. The annual sales level is for the overall parent company and the production volume is site-specific. Any company with annual sales less than or equal to \$4 million is considered to be a small business regardless of production volume.

iii. Chemical Substance Exemption

Certain chemical substances are exempt from the original IUR requirements. These substances include polymers, microorganisms, naturally occurring substances, and inorganic chemicals. Chemicals falling into these categories are not required to be reported, regardless of production volume or small business status.

c. Number of Submissions

The number of submissions received under the original IUR requirements has hovered around 25,000 for each of the three reporting periods (i.e., 1986, 1990, and 1994). The number of discrete chemicals reported during a single reporting period increased by 3.4 percent between 1986 and 1990, but the number reported in 1994 was 6.7 percent fewer than the number reported in 1990. Averaging the information from these three reporting periods, 25,614 reports were

filed from 2,894 sites. These statistics produce an average of about 8.85 reports per site for the original IUR.¹³

2. Industry Baseline Costs

The costs of reporting under the original IUR are defined as the “baseline” costs. These costs consist of the four steps for compliance with the requirements of the rule, as defined above: (1) compliance determination, (2) rule familiarization, (3) preparation and submission of reports, including CBI determination and substantiation, and (4) recordkeeping.

Costs associated with compliance determination and rule familiarization are incurred by each site, regardless of the number of reports submitted. Costs for preparation and submission of reports, as well as recordkeeping costs, are incurred separately for each report that is submitted. The original reporting form, the Form U, may consist of a number of individual chemical reports from one submitter site (see discussion in Section A.3 above). Table III-3 presents the baseline burden¹⁴ of compliance determination per site of between one and four technical staff hours for organic and partial exemption chemicals. These burden estimates are presented as a range to reflect the variation in the reporting community. Sites that produce fewer chemicals may only need one hour to determine compliance, while sites that produce numerous chemicals may require up to four hours (U.S. EPA 1990). The baseline cost of compliance determination is between \$59.52 and \$238.08 per site, and between \$7.09 and \$28.34 per report for organic and partial exemption chemicals.¹⁵ Inorganic chemicals are not required to report under the original IUR, and therefore the baseline burden and cost of all reporting requirements is zero for this chemical type. Table III-4 presents the baseline burden of rule familiarization per site of two technical and two managerial staff hours for organic chemicals and partial

¹³ It should be noted that the numbers of reports and sites presented above include statistics for chemicals with a production volume lower than 10,000 pounds that reported voluntarily.

¹⁴ Note that the analysis of burden is segmented between organic chemicals, partial exemption chemicals, and inorganic chemicals, to indicate the differential impact of the amendments to the IUR on the reporting requirements for each chemical type.

¹⁵ Costs were translated between per site and per report using the average of 8.4 reports per site for the 1994 CUS reporting period. This average was calculated based on the 25,058 reports filed from 2,981 sites in the 1994 reporting period (these numbers include chemicals with a production volume lower than 10,000 pounds that reported voluntarily).

exemption chemicals. The total cost of rule familiarization is \$282.26 per site, and \$33.60 per report, for organic and partial exemption chemicals.

Table III-3. Baseline Cost of Compliance Determination (1997\$)

Type of Chemical	Clerical (\$24.33/hr)		Technical (\$59.52/hr)		Managerial (\$81.61/hr)		
	Low	High	Low	High	Low	High	
Organic Chemicals and Partial Exemption Chemicals							
	Burden per Site (hours)	0	0	1	4	0	0
	Cost per Site (\$)	\$0	\$0	\$59.52	\$238.08	\$0	\$0
	Total Cost for Compliance Determination						
	Per Site	\$59.52 - \$238.08					
	Per Report ^a	\$7.09 - \$28.34					
Inorganic Chemicals							
	Burden per Site (hours)	0	0	0	0	0	0
	Cost per Site (\$)	\$0	\$0	\$0	\$0	\$0	\$0
	Total Cost for Compliance Determination						
	Per Site	\$0					
	Per Report ^a	\$0					

^a Assumes an average of 8.4 reports per site (CUS Database 1997).

Table III-4. Baseline Cost of Rule Familiarization (1997\$)

Type of Chemical		Clerical (\$24.33/hr)		Technical (\$59.52/hr)		Managerial (\$81.61/hr)	
		Low	High	Low	High	Low	High
Organic Chemicals and Partial Exemption Chemicals							
	Burden per Site (hours)	0	0	2	2	2	2
	Cost per Site (\$)	\$0	\$0	\$119.04	\$119.04	\$163.22	\$163.22
	Total Cost for Rule Familiarization						
	Per Site	\$282.26					
	Per Report ^a	\$33.60					
	Inorganic Chemicals						
	Burden per Site (hours)	0	0	0	0	0	0
	Cost per Site (\$)	\$0	\$0	\$0	\$0	\$0	\$0
	Total Cost for Rule Familiarization						
	Per Site	\$0					
	Per Report ^a	\$0					

^a Assumes an average of 8.4 reports per site (CUS Database 1997).

Table III-5 presents the cost of report preparation and submission for the original IUR. As the table indicates, burden is distributed by labor category among the four sections of the proposed Form U.¹⁶ The total cost is estimated to be between \$412 and \$605 per report, and between \$3,460 and \$5,079 per site. It should be noted that the baseline burden estimates for Facility Identification Information are not equivalent to those presented in Table III-2, because of the difference in the number of reports per Form U under the baseline versus the amendments, and because of adjustments made to account for the additional information required under the amended IUR.

Table III-5. Baseline Cost of Report Preparation and Submission^a (1997\$)

		Clerical (\$24.33/hr)		Technical (\$59.52/hr)		Managerial (\$81.61/hr)	
		Low	High	Low	High	Low	High
Reporting Form Section (Hours)							
I.	Facility ID	0.40	0.73	0.94	1.02	1.02	1.10
II.	Manufacturing Information	0.75	0.81	3.05	4.41	0.77	1.89
III.	Use and Exposure Information	0	0	0	0	0	0
IV.	CBI Reassertion	0	0	0	0	0	0
Total Hours per Report		1.15	1.54	3.99	5.43	1.79	2.99
Costs per Report		\$28.10	\$37.45	\$237.70	\$323.12	\$146.09	\$244.12
Total Cost for Report Preparation and Submission							
	Per Report	\$411.89 - \$604.68					
	Per Site ^b	\$3,460 - \$5,079					

^a For sites reporting under the original IUR.

^b Assumes an average of 8.4 reports per site (CUS Database 1997).

Source: Table III-1 and Table III-2.

¹⁶ The original Form U does not include Sections III and IV, and therefore the baseline burden for these categories is zero.

Table III-6 presents the per report recordkeeping burden for the original IUR. Estimated burden is between one half hour and one hour of clerical staff time, one and two hours of technical staff time, and one half hour and one hour of managerial staff time. Total cost of recordkeeping is between \$112 and \$225 per report, and between \$945 and \$1,890 per site.

Table III-6. Baseline Cost of Recordkeeping (1997\$)

Type of Chemical		Clerical (\$24.33/hr)		Technical (\$59.52/hr)		Managerial (\$81.61/hr)	
		Low	High	Low	High	Low	High
Organic Chemicals and Partial Exemption Chemicals							
Burden per Report (hours)		0.5	1	1	2	0.5	1
Cost per Report (\$)		\$12.16	\$24.33	\$59.52	\$119.04	\$40.80	\$81.61
Total Cost for Recordkeeping							
	Per Report	\$112.48 - \$224.98					
	Per Site ^a	\$945 - \$1,890					
Inorganic Chemicals							
Burden per Report (hours)		0	0	0	0	0	0
Cost per Report (\$)		\$0	\$0	\$0	\$0	\$0	\$0
Total Cost for Recordkeeping							
	Per Report	\$0					
	Per Site ^a	\$0					

^a Assumes an average of 8.4 reports per site (CUS Database 1997).

Source: U.S. EPA 1994, U.S. EPA 1997a.

The total cost of compliance is estimated by summing the costs of individual compliance determination, rule familiarization, report preparation and submission, and recordkeeping activities. The baseline total cost is between \$565 and \$892 per report, and between \$4,700 and \$7,500 per site (on average). These costs are presented in Table III-7.

Table III-7. Baseline Cost of Compliance (1997\$)

Compliance Task	Per Report		Per Site ^a	
	Low	High	Low	High
Compliance Determination	\$7	\$28	\$60	\$238
Rule Familiarization	\$34		\$282	
Report Preparation and Submission	\$412	\$605	\$3,460	\$5,079
Recordkeeping	\$112	\$225	\$945	\$1,890
Total	\$565	\$892	\$4,747	\$7,489

^a Assumes an average of 8.4 reports per site (CUS Database 1997).

Source: Tables III-3, III-4, III-5, and III-6.

The total industry baseline cost associated with the original IUR requirements has been calculated based on the number of submissions (24,774) received during the 1994 reporting period.¹⁷ Based on this number of reports, Table III-8 presents first year baseline costs by chemical type and production volume category. The total baseline industry cost for the 1998 reporting period is expected to be between \$13.9 million and \$21.9 million, as presented in Table III-9. The annualized cost of reporting under the original IUR is estimated to be \$4.3 million to \$6.8 million, and the net present value for reporting under the original IUR over a 20-year period is estimated to be between \$63.7 million and \$100.5 million.

Because the benefits resulting from the proposed regulation will not occur simultaneously with the costs, it is necessary to discount the future streams of costs and benefits before comparing them. The time horizon over which costs and benefits are discounted in this analysis is 20 years. A 3 percent discount rate is used in this chapter, and the results of an analysis using a 7 percent discount rate are presented in Appendix E for comparison. There is considerable debate in the economics discipline

¹⁷ An average of 25,614 submissions were received during the 1986, 1990, and 1994 reporting periods. This total includes some reports for chemicals produced below 10,000 pounds, which some companies voluntarily submitted. Removing reports for chemical submissions that do not meet the 10,000 pound threshold results in an estimate of 25,324 reports for future reporting periods. This average estimate is comparable to the number of submissions (24,774) received under the 1994 reporting period, indicating that the CUS 1994 data are a reasonable source for determining the total industry baseline cost.

whether to use the social rate of time preference or the rate of return on investment when discounting. The debate between using a rate of return on investment capital and the consumption rate of return focuses on whether investment or consumption is being displaced. The issues involving the appropriate discount rates and procedures are complex, and are not likely to be resolved soon. Much of the recent economic literature summarizing the discounting debate concludes that it is appropriate to use either the social rate of time preference or the rate of return on investments; there is not much difference between the rates. For example, Moore and Viscusi (1990) find no evidence that the rate of time preference for environmental-related health effects differs from financial rates of return and cite evidence that a 2 percent rate is appropriate. Lind (1990) recommends a range of one to 3 percent, and Freeman (1993) recommends 2 to 3 percent. Based on this information, this analysis uses a 3 percent discount rate.¹⁸

Table III-8. Annual Baseline Cost by Production Volume Category (1997\$)^a

Type of Chemical	Reports with Production Volumes 10K - 25K lbs.		Reports with Production Volumes 25K - 100K lbs.		Reports with Production Volumes >100K lbs.	
	Low	High	Low	High	Low	High
Organic Chemicals	\$1,521,231	\$2,406,832	\$2,296,267	\$3,633,064	\$10,090,527	\$15,910,076
Partial Exemption	\$0	\$0	\$0	\$0	\$0	\$0
Inorganic Chemicals	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$1,521,231	\$2,406,832	\$2,296,267	\$3,633,064	\$10,090,527	\$15,910,076

^a Costs are incurred only in the reporting year (i.e., every four years).

¹⁸ Further discussion of the approach used to develop the appropriate discount rate is presented in Appendix E.

Table III-9. Baseline First Year, Net Present Value, and Annualized Costs According to Chemical Type, Discounted at 3 Percent (million 1997\$)

Type of Chemical	First Year Cost		Net Present Value		Annualized Cost	
	Low	High	Low	High	Low	High
Organic Chemicals	\$13.9	\$21.9	\$63.7	\$100.5	\$4.3	\$6.8
Partial Exemption	\$0	\$0	\$0	\$0	\$0	\$0
Inorganic Chemicals	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$13.9	\$21.9	\$63.7	\$100.5	\$4.3	\$6.8

C. Costs of the Proposed Amendments

The costs of compliance under the proposed IUR amendments are estimated in this section. Unit costs are presented based on the four steps for compliance (see Section A.1): compliance determination; rule familiarization; report preparation and submission; and recordkeeping. Costs per site and per report are estimated, followed by discussions of the number of reports and sites under the proposed IUR amendments. Unit costs are then multiplied by the number of reports and sites to estimate the first year costs, net present value, and annual costs by chemical type.

Under the proposed amendments, submitters of certain categories of chemicals complete a partial reporting form, reporting only the facility and manufacturing information and completing the reassertion of past CBI claims. These categories of chemicals are those with annual production volumes of 25,000 to 100,000 pounds and chemicals meeting the partial exemption requirements (e.g. multiple chemical petroleum stream chemicals). The remaining chemicals, with annual production volumes greater than 100,000 pounds, must complete the full form, requiring reporting of additional information on industrial use and exposure and consumer/commercial use.

1. Costs of Compliance Determination

The labor requirements for compliance determination under the amendments are the same as the requirements under the original IUR. Essentially, each site incurs costs to determine whether compliance is necessary. Therefore, the cost of compliance attributable to the amendments,

for those sites already reporting under the original IUR, is zero. For sites not reporting under the original IUR (such as inorganic chemical companies), the cost of compliance for a typical site is between \$60 and \$238 for each reporting period. As described in the baseline section, this cost is derived from the estimated 1 - 4 hours of technical labor necessary for a compliance determination, consisting of a review of production and import data for all chemicals.

The burden of compliance determination is estimated to remain constant for first and future year reporting, given the length of the time lag between reporting cycles and the potential for changes in a site's chemical output over that time period.

2. Costs of Rule Familiarization

Once a site determines that reporting is required under either the IUR or the amendments, it is necessary for one or more individuals at the site to become familiar with the rule. Rule familiarization entails reading the rule, understanding the various reporting and administrative requirements, and determining the manner in which the reporting requirements will be met.

EPA estimates that rule familiarization for the amendments would require between 16 and 18 hours of technical labor and 6 to 8 hours of managerial labor in the first year of reporting for sites already reporting under the original IUR. For sites new to reporting (such as those reporting inorganic chemicals), EPA estimates that between 18 and 20 hours of technical labor and 8 to 10 hours of managerial labor are required. These estimates are based on EPA's estimate that rule familiarization for TRI requires an average of 22.5 hours of technical review and 12 hours of managerial review (U.S. EPA 1997a). The scope of the reporting requirements under the TRI program is similar to the proposed IUR amendments. However, the requirements under the TRI program are more complicated and therefore the burden estimate for the IUR amendments should be slightly lower. It is assumed therefore, that the time required for familiarization with the amended IUR will be reduced by 2.5-4.5 hours of technical time and 2-4 hours of managerial time relative to the estimates developed for rule familiarization with the TRI requirements.

In future reporting years, the burden of rule familiarization under the amendments is estimated to be equal to the burden under the original IUR. For sites currently reporting, there is no incremental burden associated with the amendments. For sites new to reporting, the burden is estimated to be two hours of technical labor and two hours of managerial labor. EPA has assumed that the burden of rule familiarization is incurred in both first and future reporting due to the length of the time between reporting cycles. EPA recognizes, however, that the burden of familiarization in future years is significantly less than the initial first year burden.

Multiplying by the appropriate labor costs, EPA estimates incremental rule familiarization costs for the proposed amendments of \$1,442 to \$1,724 per site in the first year of reporting for typical sites reporting under the original IUR. For those sites, and assuming an average of 8.4 reports per site, rule familiarization costs are between \$172 and \$205 per report. For sites new to reporting, first year costs of rule familiarization are slightly higher. Those costs are estimated to be between \$1,724 and \$2,006 per site, or between \$205 and \$239 per report. The incremental labor requirements and estimated costs associated with rule familiarization are presented in Tables III-10 and III-11 below.¹⁹

¹⁹ The following tables categorize the burden and cost estimates for the various compliance steps according to chemical type and the type of Form U completed. Chemicals with production volumes less than 25,000 pounds are denoted by “PV<25K lbs.,” chemicals with production volumes between 25,000 and 100,000 pounds and chemicals meeting the partial exemption requirements are denoted by “Partial Form,” and chemicals with production volumes greater than 100,000 pounds are denoted by “Full Form.”

Table III-10. Incremental Burden Per Site of Rule Familiarization (hours)

Type of Chemical	First Year Reporting						Future Year Reporting					
	Clerical		Technical		Managerial		Clerical		Technical		Managerial	
	Lo	Hig	Lo	Hig	Lo	Hig	Lo	Hig	Lo	Hig	Lo	Hig
Organic and Partial Exemption Chemicals												
PV < 25K	0	0	(2)	(2)	(2)	(2)	0	0	(2)	(2)	(2)	(2)
Partial Form	0	0	16	18	6	8	0	0	0	0	0	0
Full Form	0	0	16	18	6	8	0	0	0	0	0	0
Inorganic Chemicals												
PV < 25K	0	0	0	0	0	0	0	0	0	0	0	0
Partial Form	0	0	18	20	8	10	0	0	2	2	2	2
Full Form	0	0	18	20	8	10	0	0	2	2	2	2

Source: U.S. EPA 1990 and U.S. EPA 1997a.

Table III-11. Incremental Costs of Rule Familiarization (1997\$)

Type of Chemical	Per Site Cost				Per Report Cost ^a			
	First Year		Future Years		First Year		Future Years	
	Low	High	Low	High	Low	High	Low	High
Organic and Partial Exemption Chemicals								
PV < 25K	(\$282)	(\$282)	(\$282)	(\$282)	(\$34)	(\$34)	(\$34)	(\$34)
Partial Form	\$1,442	\$1,724	\$0	\$0	\$172	\$205	\$0	\$0
Full Form	\$1,442	\$1,724	\$0	\$0	\$172	\$205	\$0	\$0
Inorganic Chemicals								
PV < 25K	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Partial Form	\$1,724	\$2,006	\$282	\$282	\$205	\$239	\$34	\$34
Full Form	\$1,724	\$2,006	\$282	\$282	\$205	\$239	\$34	\$34

^a Assumes an average of 8.4 reports per site (CUS Database 1997).

Note: Parentheses denote negative estimates (i.e., savings instead of costs).

3. Costs of Preparation and Submission of Report

Once a site has determined that its chemical output must be reported and has become familiar with the rule, the required information must be collected and a Form U must be completed, reviewed, and submitted to EPA. This section presents the burden and cost estimates associated with

this process. A more detailed description of the survey results upon which these burden estimates are based is provided in Appendix D.

a. Data Requirements

The original IUR requires the provision of certain basic production and manufacturer identification information. The costs associated with these data elements comprise the baseline cost of preparation and reporting. The proposed amendments add requirements for information related to worker exposure and chemical use. The costs associated with these additional data elements comprise the costs of the proposal. Box III-1, at the beginning of this chapter, presents these additional data requirements. Chapter I, Section B presents a more detailed discussion.

b. Estimates of Labor Hours and Associated Costs

Estimates for the amount of time required to complete and submit the amended Form U were developed from the results of the survey described in Appendix D. Survey results were adjusted to account for changes in the draft Form U prior to proposal and were weighted based on company size to reflect the universe of companies expected to report under the proposed amendments. The final estimates are presented in Table III-2 at the beginning of this chapter.

Table III-12 presents the incremental costs of preparation and submission of a report under the proposed amendments.²⁰ For chemicals produced between 25,000 and 100,000 pounds and for chemicals meeting the partial exemptions, the incremental cost is estimated to be between \$404 and \$809 per report for each organic and partially exempt chemical and \$692 to \$1,166 per report for each inorganic chemical. The incremental per site cost is estimated to be between \$3,393 and \$6,793 for organic and partially exempt chemical reporting and between \$5,815 and \$9,796 for inorganic chemical reporting.²¹ For the first year of reporting under the proposed amendments, the incremental cost for inorganic chemicals is expected to be higher because reporting of inorganic chemicals is not required

²⁰ Although average unit costs of submissions are expected to fall within the ranges presented in Tables III-2 and III-12, individual submissions with especially few or numerous customers, processing, and/or use sites may have costs outside the presented ranges.

²¹ This analysis assumes an average of 8.4 reports per site of one type of chemical. A more typical scenario would involve a mixture of chemical types.

under the original IUR; therefore the full cost of reporting is attributable to the amendments. This is slightly offset by the lack of need for CBI reassertion for the first year.

For chemicals not partially exempt and produced at volumes greater than 100,000 pounds, all sections of the form would be completed. The incremental unit cost for those large volume chemicals is expected to range from \$2,236 to \$2,797 per report for each organic chemical and from \$2,524 to \$3,155 for each inorganic chemical. The incremental per site cost is estimated to be between \$18,782 and \$23,498 for organic chemical reporting and between \$21,205 and \$26,502 for inorganic chemical reporting.¹³ Note that these costs are overestimated because not all reports contained CBI claims in the last reporting period, and therefore not all will bear the burden of reassertion of past claims.

The burden associated with CBI claims is accounted for in a variety of ways. For the basic CBI claim, the estimated burden is included with the burden estimates for each data element. Up-front substantiation burdens are accounted for separately, as reported in Table III-2. The burden of complying with these requirements and the frequency of CBI claims is discussed further in Box III-2, below. Reassertion of CBI claims is identified as Section IV of the reporting form. For the first year of reporting under the proposed amendments, reassertion applies to claims made under the original IUR. This means two things: (1) that the first year burden estimates for CBI reassertion are roughly equal to the estimated reassertion burden associated with chemicals reporting only facility identification and manufacturing information and (2) that the first year's estimates do not depend upon production volume or chemical type (except for inorganic chemicals, which were not reported under the original IUR). The estimated burden of reassertion in the first year of reporting is 0.5 to 1.0 hours of clerical time, 0.5 to 1.0 hours of technical time, and 1.0 to 2.0 hours of managerial time (U.S. EPA 1994, U.S. EPA 1996c, U.S. EPA 1996f).

Table III-12. First Year Incremental Cost of Preparation and Submission of a Report Associated with the Amendments for Sites Already Reporting (\$1997)

		Clerical (\$24.33/hr)		Technical (\$59.52/hr)		Managerial (\$81.61/hr)	
		Low	High	Low	High	Low	High
Reporting Form Section (Hours)							
I.	Facility Identification	0.17	0.30	Minimal	Minimal	Minimal	Minimal
II.	Manufacturing Information	0.61	0.61	2.98	5.22	1.02	2.79
III.	Processing and Use Information	3.29	3.43	21.11	23.12	6.07	6.48
IV	CBI	0.50	1.00	0.50	1.00	1.00	2.00
Total Hours per Report, by Labor Category							
Partial Form		1.27	1.90	3.49	6.23	2.02	4.79
Full Form		4.56	5.34	24.60	29.35	8.10	11.28
Total Costs per Report, by Labor Category							
Partial Form		\$30.93	\$46.26	\$207.84	\$371.09	\$165.11	\$391.31
Full Form		\$110.98	\$129.82	\$1,464.3	\$1,747.1	\$660.72	\$920.34
Total Cost per Report							
Partial Form		\$404 - \$809 ^{b,c}					
Full Form		\$2,236 - \$2,797 ^b					
Total Cost per Site ^d							
Partial Form		\$3,393 - \$6,793 ^{b,c}					
Full Form		\$18,782 - \$23,498 ^b					

Note: Numbers may not calculate exactly due to rounding.

^a The burden of CBI reassertion for reporting in the first year is less than the burden incurred in future years, because reassertion applies only to the information required under the original IUR. The burden of CBI reassertion for future year reporting is presented in Table III-14.

^b Total cost for inorganic chemicals reporting the partial form is \$692 to \$1,166 per report and the cost for the full form is \$2,524 to \$3,155 per report. The per site costs for inorganic chemicals are \$5,815 to \$9,796 for completion of the partial form and \$21,205 to \$26,502 for completion of the full form. The difference in cost from the other chemicals is due to the lack of any baseline costs (therefore the full cost of reporting is due to the amendments) and the lack of first year CBI reassertion costs. In future years, reassertion costs for inorganic chemicals will be incurred (see Table III-14).

^c This is also the first year per report cost for chemicals meeting the partial exemption requirements.

^d Assumes an average of 8.4 reports of one type per site. Please note that a more typical scenario would involve a mixture of report types.

Sources: Tables III-1, III-2, and III-5.

c. Unit Cost Scaling Factors

Unit costs for future reporting cycles are expected to be lower than unit costs attributed to first year reporting because of efficiencies achieved through the establishment of compliance processes, the availability of data from previous reporting cycles, and familiarity with reporting requirements. To account for these efficiencies, EPA has incorporated a set of scaling factors for the unit cost of preparation and substantiation of future year reports. The remainder of this section focuses on the methodology and assumptions used to determine these scaling factors.

The unit cost of preparation and submission of reports in future years is assumed to be lower than the cost of reporting in the first year due to efficiencies of repeated reporting. These efficiencies vary based on the types of information reported and whether or not that information changes significantly from year to year. Based on these assumptions and a cost analysis for a similar reporting rule²², scaling factors have been developed for each section of the reporting form under the proposed IUR amendments. These scaling factors, presented in Table III-13, are applied to each reporting period following the first. For reassertion of past CBI claims, first year costs do not include reassertion for exposure and use information (because this information has not been previously reported). However, the second reporting year would include CBI claims for exposure and use information, and, hence, the full burden of reassertion is first incurred during the second reporting period.²³

Table III-14 presents the estimated incremental burden and cost of preparation and submission of a report in future years. As shown, the expected incremental cost for chemicals required to complete the partial form is between \$347 and \$696 per report for organic and partial exemption chemicals, and between \$759 and \$1,301 per report for inorganic chemicals. The incremental per site costs for partial reporters are between \$2,915 and \$5,846 for organic and partial exemption reporting, and between \$6,376 and \$10,928 for inorganic chemical reporting. The estimated incremental cost of completing the full form is between \$1,924 and \$2,510 per report for organic and partial exemption chemicals, and between \$2,336 and \$3,115 per report for inorganic chemicals. The incremental per site cost for full

²² Analysis is entitled *Economic Analysis of the Final Rule to Add Certain Industry Groups to EPCRA Section 313* (U.S. EPA 1997a).

²³ Note that there are no first year CBI reassertion costs for inorganic chemicals because these chemicals did not previously report, and, therefore, have no information to reassert as CBI. In future years, reassertion costs for inorganic chemicals will be incurred.

form reporters is between \$16,162 and \$21,084 for organic and partial exemption chemical reporting and between \$19,622 and \$26,166 for inorganic chemical reporting.

Box III-2.
Reporting Burden of Complying with CBI Requirements

The calculations used to develop CBI compliance costs for the Economic Analysis (EA) are based on information from the industry survey (ICF 1996). As derived from the survey, Table III-2 presents typical costs associated with compliance for various CBI substantiation issues attributable to the proposed IUR amendments. The costs range from \$215 to \$472, as compared to \$110 to \$200 under the current IUR requirements, resulting in incremental costs of between \$105 and \$272. Survey respondents indicated that chemical identification, plant site identification, and production volume range information would be claimed confidential by 58 percent, 36 percent, and 78 percent of reporting companies, respectively. Companies that indicated no CBI claims were estimated to have zero compliance costs for each appropriate element.

Costs of CBI substantiation for an individual company claiming CBI status for chemical identification, plant site identification, and production volume range may be higher than the average values used in the analysis, however. Hence, typical costs may be more accurately characterized by excluding burden estimates of zero for companies that do not claim CBI status. Using only the non-zero entries, the cost of CBI compliance ranges from \$181 to \$322 for the baseline scenario, and from \$391 to \$840 under the amendments. Based on these values, the incremental cost of meeting CBI related requirements is estimated to be between \$210 and \$518, or about twice as much as used in the cost analysis.

To place this discrepancy in perspective, it is worth noting that, historically, companies have claimed information CBI less often than survey responses suggested. Information from the CUS database for the 1986, 1990, and 1994 reporting cycles indicates significantly lower percentages of CBI claims for each type of data. According to the CUS database, the fraction of companies claiming CBI status for chemical identification, plant site identification, and production volume was 3 percent, 20 percent, and 65 percent, respectively. The difference between the percentage of companies claiming CBI as derived from the CUS database and the percentage indicated by the survey data suggests that survey respondents may have been concerned about providing detailed information on uses, and hence, were conservative in their estimates of the frequency of CBI claims. EPA is aware of companies' potential reluctance to disclose such data and has elected, therefore, to ask for some information (e.g., production volume) in ranges to reduce potential confidentiality concerns. In particular, by adding check boxes for production volume range information and using this information for analysis and in public reports, EPA expects to reduce companies' confidentiality concerns.

Because of the considerations identified here, the costs presented in this analysis may tend to overestimate the number of CBI claims and therefore, the average cost of CBI substantiation, both under the baseline and the proposal. This is somewhat offset by the higher rate of claims identified in the survey as compared to historical rates identified from the CUS database. The costs used in the development of CBI compliance impacts are not expected to greatly influence costs presented in the EIA because confidentiality costs are small compared to overall costs.

Table III-13. Scaling Factors for Unit Cost of Preparation and Submission of Reports in Future Reporting Cycles Under Proposed IUR Amendments

Part-Section of Reporting Form	Description of Information	Incurred Percent of First Year Cost		Comments
		2-Year Reporting Cycle	4-Year Reporting Cycle	
Facility Identification and Manufacturing Information				
I-1	Certification	100	100	No reduction expected.
I-2	Company Information	20	20	Technical contact may change, but other information unlikely to change.
I-3	Plant Site Identification	20	20	Information unlikely to change.
II-1	Chemical Identification	20	20	Information unlikely to change.
II-6, II-7, II-8, II-9, II-10	Manufacturing	70	80	Information may change.
Processing and Use Information				
III-A	Industrial Use and Exposure Related Data	70	80	Information may change.
III-B	Consumer and Commercial End-Use Exposure Related Data	70	80	Information may change.
Reassertion of Past CBI Claims				
IV	Reassertion	100	100	No reduction expected. However, cost is not incurred for reassertion of exposure and use information in the first reporting year.

Table III-14. Future Years Incremental Cost of Preparation and Submission of a Report under the Proposed IUR Amendments (1997\$)

		Clerical (\$24.33/hr)		Technical (\$59.52/hr)		Managerial (\$81.61/hr)	
		Low	High	Low	High	Low	High
Reporting Form Section (Hours)							
I.	Facility Identification	0.14	0.26	Minimal	Minimal	Minimal	Minimal
II.	Manufacturing Information	0.48	0.48	2.38	4.18	0.82	2.23
III.	Processing and Use Information	2.63	2.75	16.89	18.50	4.86	5.19
IV.	CBI Reassertion ^a	0.50	1.00	1.00	2.00	2.00	4.00
Total Hours per Report, by Labor Category							
Partial Form		1.12	1.74	2.89	5.18	1.82	4.23
Full Form		3.75	4.49	20.28	24.68	7.67	11.42
Total Costs per Report, by Labor Category							
Partial Form		\$27.25	\$42.41	\$171.84	\$308.37	\$148.20	\$345.48
Full Form		\$91.29	\$109.26	\$1,206.77	\$1,468.76	\$626.30	\$931.93
Total Cost per Report							
Partial Form		\$347 - \$696 ^b					
Full Form		\$1,924 - \$2,510 ^b					
Total Cost per Site ^c							
Partial Form		\$2,915 - \$5,846 ^b					
Full Form		\$16,162 - \$21,084 ^b					

Note: Numbers may not calculate exactly due to rounding.

^a CBI reassertion burden estimates for completion of the partial form in future years are equal to CBI reassertion burden estimates in the first year of reporting under the amendments, as detailed in Table III-12.

^b The future years cost for inorganic chemicals reporting the partial form is \$759 to \$1,301 and the cost for the full form is \$2,336 to \$3,115. The per site future years costs for inorganic chemicals are \$6,376 to \$10,928 for completion of the partial form and \$19,622 to \$26,166 for completion of the full form. These costs are higher than for organic chemicals because inorganic chemicals are not required to report under the original IUR. CBI reassertion costs for inorganic chemicals are included in estimates of future year costs.

^c Assumes an average of 8.4 reports per site. Please note that a more typical scenario would involve a mixture of report types.

Sources: Tables III-1, III-2, III-5, and III-13.

4. Costs of Recordkeeping

The original IUR requires that sites maintain records of reported information for at least 4 years from the effective date of the reporting period. The quantified costs associated with these original recordkeeping requirements consist of the costs of labor to compile and maintain collected information. Sites may maintain records such as invoices, receiving tickets, and incident and operating logs. EPA assumes that the average burden of recordkeeping under the proposed amendments will be somewhat greater than the burden under the original IUR because it is likely submitters under the proposal would maintain additional records, and the records must be maintained for five years, one year longer than the original requirements. It is expected that recordkeeping of files is an on-going activity and that the cost associated with maintaining these records will be constant for each reporting period. Based on the labor requirements presented in Table III-15, the estimated incremental cost of recordkeeping incurred under the proposal is between \$112 and \$225 per report for organic and partial exemption chemicals,²⁴ and between \$225 and \$450 per report for inorganic chemicals. The per site incremental recordkeeping cost

²⁴ Recordkeeping costs for completion of the partial form may be overstated because the level of information required to be maintained is slightly lower than for completion of the full form. It is assumed however that because these overstated costs are small relative to other costs, they will have a minimal impact on total cost estimates.

Table III-15. Incremental Burden Per Report of Recordkeeping (hours)

Type of Chemical	Clerical		Technical		Managerial	
	Low	High	Low	High	Low	High
Organic and Partial Exemption Chemicals						
PV < 25K	(0.5)	(1)	(1)	(2)	(0.5)	(1)
Partial Form	0.5	1	1	2	0.5	1
Full Form	0.5	1	1	2	0.5	1
Inorganic Chemicals						
PV < 25K	0	0	0	0	0	0
Partial Form	1	2	2	4	1	2
Full Form	1	2	2	4	1	2

Note: Parentheses denote savings instead of costs.

is between \$945 and \$1,890 for organic and partial exemption chemical reporting, and between \$1,890 and \$3,780 for inorganic chemical reporting for completion of either the full or partial form. Costs are higher for inorganic chemicals since they currently do not report. Table III-16 presents the incremental costs per report associated with these routine recordkeeping activities (U.S. EPA 1994, U.S. EPA 1997a).

Table III-16. Incremental Cost of Recordkeeping (1997\$)

Type of Chemical		Per Report Cost				Per Site Cost ^a			
		First Year		Future Years		First Year		Future Years	
		Low	High	Low	High	Low	High	Low	High
Organic and Partial Exemption Chemicals									
	PV < 25K	(\$112)	(\$225)	(\$112)	(\$225)	(\$945)	(\$1,890)	(\$945)	(\$1,890)
	Partial Form	\$112	\$225	\$112	\$225	\$945	\$1,890	\$945	\$1,890
	Full Form	\$112	\$225	\$112	\$225	\$945	\$1,890	\$945	\$1,890
Inorganic Chemicals									
	PV < 25K	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Partial Form	\$225	\$450	\$225	\$450	\$1,890	\$3,780	\$1,890	\$3,780
	Full Form	\$225	\$450	\$225	\$450	\$1,890	\$3,780	\$1,890	\$3,780

^a Assumes an average of 8.4 reports per site (CUS Database 1997).

Note: Parentheses denote savings instead of costs.

5. Summary of Estimated Unit Costs

This section summarizes the incremental costs of compliance with the IUR amendments. Costs are presented for three categories of reporting (production volume less than 25,000 pounds, partial form U reporting, and full form U reporting) and for two types of chemicals (organic and inorganic). Table III-17 presents the summary on a per report basis. Table III-18 presents the summary on a per site basis. As discussed previously, numbers were translated based upon an average of 8.4 reports per site.²⁵

Table III-17. Summary of Incremental Per Report Costs (1997\$)

Type of Chemical		First Year		Future Years	
		Low	High	Low	High
Organic and Partial Exemption Chemicals					
	PV < 25K lbs.	(\$565)	(\$892)	(\$565)	(\$892)
	Partial Form	\$688	\$1,239	\$459	\$921
	Full Form	\$2,520	\$3,227	\$2,036	\$2,735
Inorganic Chemicals					
	PV < 25K lbs.	\$0	\$0	\$0	\$0
	Partial Form	\$1,129	\$1,883	\$1,025	\$1,813
	Full Form	\$2,961	\$3,872	\$2,602	\$3,267

Sources: Tables III-11, III-12, III-14, and III-16.

²⁵ Translations between per site and per report assumed that all reports at a site were of the same type (i.e., full form versus partial form). In reality, a mix of report types would be expected.

Table III-18. Summary of Incremental Per Site Costs (1997\$)

Type of Chemical		First Year		Future Years	
		Low	High	Low	High
Organic and Partial Exemption Chemicals					
	PV < 25K lbs.	(\$4,747)	(\$7,489)	(\$4,747)	(\$7,489)
	Partial Form	\$5,780	\$10,407	\$3,860	\$7,736
	Full Form	\$21,169	\$27,112	\$17,107	\$22,974
Inorganic Chemicals					
	PV < 25K lbs.	\$0	\$0	\$0	\$0
	Partial Form	\$9,489	\$15,820	\$8,608	\$15,228
	Full Form	\$24,879	\$32,526	\$21,854	\$30,466

Sources: Tables III-11, III-12, III-14, and III-16.

6. Numbers of Reports

To calculate the industry-wide incremental and total expected costs, EPA estimated the anticipated number of reports for the first and future reporting cycles. EPA first examined the historical levels of submissions during the 1986, 1990, and 1994 reporting periods. The number of reports submitted over those three periods varied from the average submission level of 25,614 by only 0.3 to 2.5 percent. Since the number of reports previously submitted has remained fairly constant, EPA held the yearly number of reports constant over the 20-year period covered by the cost analysis. EPA then estimated the number of inorganic chemicals using historical proportions of organic to inorganic chemicals from the Chemical in Commerce Information System (CICIS) database. Details on the development of these estimates can be found in Appendix C. Accounting for the changes in exemptions and reporting threshold under the amendments, EPA estimates that the total number of reports submitted under the proposal would be 26,811. Approximately 58 percent of those reports would be for chemicals produced in excess of 100,000 pounds and not eligible for partial exemption.

Reports for these chemicals would require that the entire Form U be completed. The remaining 42 percent would be required to complete only the partial Form U.²⁶

7. Number of Sites

There are an estimated 3,485 sites that manufacture or import a reportable chemical at a volume greater than 25,000 pounds annually. These sites would have to report under the IUR amendments (CUS Database 1997, CICIS Database 1986). This estimate reflects the number of sites that would be reporting organic chemicals, including petroleum streams, and inorganic chemicals, as outlined in the proposed amendments.

8. Total Cost for Proposed IUR Amendments

The total costs to industry of the proposed IUR amendments are estimated for the first year of reporting and for future reporting years in constant 1997 dollars. Total costs are calculated based on the unit costs and the number of reports and sites estimated earlier in this chapter. These costs were developed based on costs for each type of chemical (i.e., inorganic chemicals, organic chemicals, or partial exemption) and for each reporting threshold (i.e., completing a full or partial form, based on production volume and exemption status).

a. First Year Costs of Proposed Amendments

Incremental first year costs for the proposed amendments were developed by combining information from Tables III-17, III-18, III-24a, III-24b and III-25.²⁷ These costs are presented

²⁶ The proposed amendments currently include a partial exemption for petroleum stream chemicals. Additionally, EPA is considering an expansion of the set of chemicals eligible for this exemption. Chemicals deemed by EPA to be of low priority would be eligible for the same reduced level of reporting. These chemicals would be considered to be low priority for further risk assessment and management. At the time of this analysis, EPA has not determined the chemicals that would be eligible for the low priority exemption and hence they are not included in this economic analysis. However, EPA feels that the number of chemicals that would be eligible for this exemption is likely to be small and therefore any effect on the burden would also be small.

²⁷ Tables III-24a, III-24b and III-25 present the estimated number of reports and reporting sites under the proposed amendments. The estimates in these tables were used to develop industry-wide incremental and total costs of the proposed amendments in Tables III-19 through III-22, however they have been placed in Section D below for organizational purposes.

in Table III-19 below.²⁸ Table III-20 presents the sum of the baseline and incremental costs, or the total costs of the amended IUR. As shown, incremental first year industry cost for the proposal is approximately \$47.9 million to \$65.4 million. For the full amended IUR, the total estimated first year industry cost is approximately \$61.8 million to \$87.4 million.

Table III-19. Incremental First Year Cost of Amendments (million 1997\$)

Type of Chemical	PV<25K		Partial Form		Full Form		Total	
	Low	High	Low	High	Low	High	Low	High
Organic Chemicals	(\$1.5)	(\$2.4)	\$2.3	\$4.6	\$29.1	\$36.3	\$29.9	\$38.5
Partial Exemption Chemicals	\$0	\$0	\$6.9	\$11.9	\$0	\$0	\$6.9	\$11.9
Inorganic Chemicals	\$0	\$0	\$1.1	\$2.0	\$10.0	\$13.0	\$11.1	\$15.0
Total	(\$1.5)	(\$2.4)	\$10.3	\$18.4	\$39.1	\$49.4	\$47.9	\$65.4

Source: Tables III-17, III-18, III-24a, 24b, and III-25.

Table III-20. Total First Year Cost of IUR Compliance, with Amendments (million 1997\$)

Type of Chemical	PV<25K		Partial Form		Full Form		Total	
	Low	High	Low	High	Low	High	Low	High
Organic Chemicals	\$0	\$0	\$4.6	\$8.2	\$39.2	\$52.2	\$43.	\$60.5
Partial Exemption Chemicals	\$0	\$0	\$6.9	\$11.9	\$0	\$0	\$6.9	\$11.9
Inorganic	\$0	\$0	\$1.1	\$2.0	\$10.0	\$13.0	\$11.	\$15.0
Total	\$0	\$0	\$12.6	\$22.1	\$49.2	\$65.3	\$61.8	\$87.4

Source: Tables III-17, III-18, III-24a, III-24b, and III-25.

b. Future Costs of Proposed Amendments

²⁸ Although Tables III-17 and III-18 indicate a negative per report and per site cost for partial exemption chemicals with production volumes less than 25,000, the costs associated with partial exemption chemicals under this production threshold are zero. This is because there are no partial exemption chemicals under the baseline. Chemicals that were reported under the baseline, such as petroleum stream chemicals, but that would be eligible for the partial exemption under the amendments, have been included with the totals for organic chemicals under the baseline.

The annual incremental industry costs associated with the proposed IUR amendments in each future reporting year are presented in Table III-21; the total costs are presented in Table III-22.

Table III-21. Incremental Annual Cost of Amendments in Future Years (million 1997\$)

Type of Chemical	PV<25K		Partial Form		Full Form		Total	
	Low	High	Low	High	Low	High	Low	High
Organic Chemicals	(\$1.5)	(\$2.4)	\$2.0	\$4.1	\$21.9	\$28.7	\$22.4	\$30.4
Partial Exemption Chemicals	\$0	\$0	\$5.8	\$10.3	\$0	\$0	\$5.8	\$10.3
Inorganic Chemicals	\$0	\$0	\$1.2	\$2.1	\$8.6	\$12.0	\$9.8	\$14.1
Total	(\$1.5)	(\$2.4)	\$9.1	\$16.6	\$30.4	\$40.6	\$38.0	\$54.8

Source: Tables III-17, III-18, III-24a, III-24b, and III-25.

Table III-22. Total Annual Cost of IUR Compliance, with Amendments, in Future Years (million 1997\$)

Type of Chemical	PV<25K		Partial Form		Full Form		Total	
	Low	High	Low	High	Low	High	Low	High
Organic Chemicals	\$0	\$0	\$4.4	\$7.7	\$32.0	\$44.6	\$36.3	\$52.3
Partial Exemption Chemicals	\$0	\$0	\$5.8	\$10.3	\$0	\$0	\$5.8	\$10.3
Inorganic Chemicals	\$0	\$0	\$1.2	\$2.1	\$8.6	\$12.0	\$9.8	\$14.1
Total	\$0	\$0	\$11.4	\$20.2	\$40.5	\$56.5	\$51.9	\$76.7

Source: Tables III-17, III-18, III-24a, III-24b, and III-25.

D. Overview of Reporting Options

EPA examined a variety of options to the proposed amendments, including changes in reporting thresholds, reporting exemptions, and reporting cycles. Overall, fourteen options were analyzed. For all but two options, the partial exemption of petroleum stream chemicals and the elimination of the

inorganic chemical exemption were held constant. Table III-23 summarizes the options. Options 1-9 assumed a four-year reporting cycle, but each option incorporated a different reporting threshold scheme.

The options use a reporting threshold for the partial form (facility identification and manufacturing information), of either the original 10,000 pounds or 25,000 pounds. The reporting threshold for the full form was varied from 10,000 pounds to ten million pounds. Option 9 incorporated a stepped threshold for the full form - for the first reporting period, the threshold is 500,000 pounds and for subsequent reporting periods the threshold drops to 100,000 pounds. Option 10 incorporated the reporting thresholds outlined in the proposed option, but proposes a full exemption from reporting for certain petroleum streams (those that are site-limited), rather than the proposed petroleum stream partial exemption. Option 11 used the same reporting thresholds as Option 4, but continued the existing exemption for inorganic chemicals.

Options 12, 13, and 14 used the same reporting thresholds as the proposed option (25,000 pounds for the partial form and 100,000 pounds for the full form), but incorporate different reporting cycles. Option 12 used a reporting cycle of two years for the partial form (which must be completed by all sites) and four years for the full form, Option 13 called for a reporting cycle of two years for all information, and Option 14 required only one-time reporting.

1. Numbers of Reports and Sites

Table III-24a presents the number of reports expected for each option, and Table III-24b details these reports by chemical type. Under the proposed amendments, partial forms will be completed for 4,421 organic chemicals, 5,733 partial exemption chemicals, and 1,226 inorganic chemicals. Of these 5,733 partial exemption chemicals, 131 are produced at volumes less than the 100,000 pound threshold. The partial exemption provides a smaller degree of benefit for these chemicals, because the lower production volume already exempts them from completion of the full form. Full forms will be completed for 12,155 organic chemicals and 3,276 inorganic chemicals under the proposed option.

Table III-23. Reporting Options for the Proposed IUR Amendments

Option	Thresholds		Reporting Cycles		Exemptions	
	Facility Identification and Manufacturing Information	Processing and Use Information	Facility Identification and Manufacturing Information	Processing and Use Information	Facility Identification and Manufacturing Information	Processing and Use Information
Proposed Option						
4	25,000 lb	100,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
Alternate Threshold Options						
1	10,000 lb	10,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
2	25,000 lb	25,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
3	10,000 lb	100,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
5	10,000 lb	500,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
6	25,000 lb	500,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
7	25,000 lb	1,000,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
8	25,000 lb	10,000,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
9	25,000 lb	500,000 lb/100,000 lb	4 yrs.	4 yrs.	----	Partial Exemption Chemicals
Reporting Exemption Options						
10	25,000 lb	100,000 lb	4 yrs.	4 yrs.	Site-Limited Petroleum Streams	
11	25,000 lb	100,000 lb	4 yrs.	4 yrs.	Inorganic Chemicals	
					----	Partial Exemption Chemicals
Reporting Cycle Options						
12	25,000 lb	100,000 lb	2 yrs.	4 yrs.	----	Partial Exemption Chemicals
13	25,000 lb	100,000 lb	2 yrs.	2 yrs.	----	Partial Exemption Chemicals
14	25,000 lb	100,000 lb	One-time Reporting	One-time Reporting	----	Partial Exemption

The number of partial and full forms completed for organic, partial exemption, and inorganic chemicals varies by option. Under Options 1 and 2, a greater number of full forms are completed than under the proposed option, because these options have lower thresholds for facility and manufacturing information. The total number of reports completed is greater under the proposed option than under Option 1, while under Option 2 the total number of reports, and their allocation by chemical type, is equal to the proposed option. Under Option 3, the number of full forms completed, and the allocation of these forms by chemical type, is the same as under the proposed option. The number of partial forms completed under this option, and the number of partial exemption chemicals produced at volumes under 100,000 pounds, are greater than under the proposed option. Under Options 5, 6, 7, and 8, and the first reporting period under Option 9, the number of partial forms completed and the number of partial exemption chemicals produced under the 100,000 pound threshold are greater than under the proposed option, because of the higher thresholds for facility and manufacturing information under these options. For all of the options except Option 5, the allocation of the total number of reports by chemical type is equal to the allocation under the proposed option.

Table III-24a. Number of Reports Expected for Each Option

Option	Total # of Reports	Partial Form			Full Form		
		Threshold Level	Number of Reports	% of Total	Threshold Level	Number of Reports	% of Total
Baselin	24,774	10,000	24,774	100	N/A	0	0
1	30,598	10,000	5,833	19.1	10,000	24,765	80.9
2	26,811	25,000	5,733	21.4	25,000	21,078	78.6
3	30,598	10,000	15,167	49.6	100,000	15,431	50.4
4	26,811	25,000	11,380	42.4	100,000	15,431	57.6
5	30,598	10,000	20,511	67.0	500,000	10,087	33.0
6	26,811	25,000	16,724	62.4	500,000	10,087	37.6
7	26,811	25,000	18,393	68.6	1,000,000	8,418	31.4
8	26,811	25,000	22,435	83.7	10,000,00	4,376	16.3
9 ^a	26,811	25,000	16,724	62.4	500,000	10,087	37.6
			11,380	42.4	100,000	15,431	57.6
10 ^b	25,577	25,000	5,763	22.5	100,000	19,814	77.5
11	22,309	25,000	10,154	45.5	100,000	12,155	54.5
12	26,811	25,000	11,380	42.4	100,000	15,431	57.6
13	26,811	25,000	11,380	42.4	100,000	15,431	57.6
14	26,811	25,000	11,380	42.4	100,000	15,431	57.6

^a This option would have a reporting threshold of 500,000 pounds for the full form in the first year and 100,000 pounds for the full form in future reporting years.

^b Site-limited petroleum streams are exempt from all reporting under this option. The number of organic chemical reports includes all reportable petroleum stream chemicals except site-limited petroleum streams.

Sources: CUS Database 1996, CUS Database 1997, and CICIS Database 1986.

Table III-24b. Number of Reports by Chemical Type Expected for Each Option

Option	Partial Form				Full Form			
	Threshold Level	Number of Reports			Threshold Level	Number of Reports		
		Organic Chemicals	Partial Exemption Chemicals	Inorganic Chemicals		Organic Chemicals	Partial Exemption Chemicals	Inorganic Chemicals
Baselin	10,000	24,774	0	0	N/A	0	0	0
1	10,000	0	5,833	0	10,000	19,490	0	5,275
2	25,000	0	5,733	0	25,000	16,576	0	4,502
3	10,000	7,335	5,833	1,999	100,000	12,155	0	3,276
4	25,000	4,421	5,733	1,226	100,000	12,155	0	3,276
5	10,000	11,474	5,833	3,204	500,000	8,016	0	2,071
6	25,000	8,560	5,733	2,431	500,000	8,016	0	2,071
7	25,000	9,844	5,733	2,816	1,000,000	6,732	0	1,686
8	25,000	12,989	5,733	3,713	10,000,00	3,587	0	789
9 ^a	25,000	8,560	5,733	2,431	500,000	8,016	0	2,071
		4,421	5,733	1,226	100,000	12,155	0	3,276
10 ^b	25,000	4,537	NA	1,226	100,000	16,538	0	3,276
11	25,000	4,421	5,733	0	100,000	12,155	0	0
12	25,000	4,421	5,733	1,226	100,000	12,155	0	3,276
13	25,000	4,421	5,733	1,226	100,000	12,155	0	3,276
14	25,000	4,421	5,733	1,226	100,000	12,155	0	3,276

^a This option would have a reporting threshold of 500,000 pounds for the full form in the first year and 100,000 pounds for the full form in future reporting years.

^b Site-limited petroleum streams are exempt from all reporting under this option. The number of organic chemical reports includes all reportable petroleum stream chemicals except site-limited petroleum streams.

Source: Appendix C.

Under Option 10, the number of reports completed for organic chemicals is greater than under the proposed option; however, the number of partial and full forms completed for inorganic chemicals is the same as for the proposed option. Under Option 11, the number of full and partial forms completed for organic chemicals and partial exemption chemicals is the same as under the proposed option, however no inorganic chemical reports are completed under this option. Under Options 12, 13, and 14, and subsequent reporting periods under Option 9, the total number of reports and their allocation by chemical type are the same as under the proposed option (because there are no changes to the reporting thresholds or exemptions).

The expected number of sites that would report under each option for the proposed amendments is presented in Table III-25 below. Additionally, Table III-26 presents the number of

chemicals expected to be reported. Although information on number of chemicals is not used to calculate the estimates of industry costs, the table provides a useful comparison of the expected number of chemicals for each option.

Table III-25. Numbers of Sites Expected for Each Option

Option	Threshold Level	Number of Sites			
		Organic Chemicals	Partial Exemption Chemicals	Inorganic Chemicals	Total
Baselin	10,000	2,683	0	0	2,683
1	10,000	2,511	526	633	3,670
2	25,000	2,416	529	540	3,485
3	10,000	2,511	526	633	3,670
4	25,000	2,416	529	540	3,485
5	10,000	2,511	526	633	3,670
6	25,000	2,416	529	540	3,485
7	25,000	2,416	529	540	3,485
8	25,000	2,416	529	540	3,485
9	25,000	2,416	529	540	3,485
10 ^a	25,000	2,825	NA	540	3,365
11	25,000	2,416	529	0	2,945
12	25,000	2,416	529	540	3,485
13	25,000	2,416	529	540	3,485
14	25,000	2,416	529	540	3,485

^a Site-limited petroleum streams are exempt from all reporting under this option. The number of organic chemical reports in this option includes all reportable petroleum stream chemicals except site-limited petroleum streams. Source: Appendix C.

Table III-26. Number of Chemicals Expected to be Reported for Each Option

Option	Total # of Chemicals	Partial Form		Full Form	
		Threshold Level	Number of Chemicals	Threshold Level	Number of Chemicals
Baseline	8,809	10,000	8,809	N/A	0
1	10,439	10,000	431	10,000	10,008
2	8,904	25,000	430	25,000	8,474
3	10,439	10,000	4,393	100,000	6,046
4	8,904	25,000	2,858	100,000	6,046
5	10,439	10,000	6,780	500,000	3,659
6	8,904	25,000	5,245	500,000	3,659
7	8,904	25,000	6,000	1,000,000	2,904
8	8,904	25,000	7,745	10,000,000	1,159
9 ^a	8,904	25,000	5,245	500,000	3,659
			2,858	100,000	6,046
10 ^b	8,617	25,000	2,431	100,000	6,186
11	7,796	25,000	2,556	100,000	5,240
12	8,904	25,000	2,858	100,000	6,046
13	8,904	25,000	2,858	100,000	6,046
14	8,904	25,000	2,858	100,000	6,046

^a This option would have a reporting threshold of 500,000 pounds for the full form in the first year and 100,000 pounds for the full form in future reporting years.

^b Site-limited petroleum streams are exempt from all reporting under this option. The number of organic chemical reports includes all reportable petroleum stream chemicals except site-limited petroleum streams.

Sources: CUS Database 1996, CUS Database 1997, and CICIS Database 1986.

2. Estimates of Industry Costs

EPA has estimated incremental and total costs to industry associated with the proposal and with the other options analyzed. Incremental costs associated with the amendment are presented in Table III-27. EPA estimates incremental first year costs for the proposed amendments, relative to original requirements, to be between \$48 million and \$65 million. The estimated annualized incremental cost for this proposal is between \$12 million and \$18 million, and the estimated net present value over a twenty year period ranges from \$184 million to \$261 million.²⁹ These costs are attributed to the time required for compliance determination, rule familiarization, preparation and submission of

²⁹ Net present values for the amendment options were calculated over a twenty year period using a discount rate of three percent. Additional discussion on the basis for using this discount rate is provided in Appendix E.

reports, and recordkeeping. The largest portion of the incremental cost corresponds to the new requirement to provide processing and use information. Total costs, combining baseline and incremental costs, are presented in Table III-28.

Industry costs for Options 1 through 3 are higher than the costs for the proposed option because information would be collected for more chemicals and/or more information would be collected. Industry costs for Options 5 through 9 have lower costs than the proposed option because fewer numbers of reports would be expected under the higher reporting threshold options. Industry costs for Option 10 are higher than the costs for the proposed option because more reports containing use and exposure information are expected under this option than under the proposed option. Industry costs for Option 11 are less than for the proposed option because all inorganic chemicals would be exempt from reporting either facility identification and manufacturing information or processing and use information. While first year costs for the three reporting cycle options (Options 12, 13, 14) are the same as for the proposal, net present value and annualized costs are significantly higher for Options 12 and 13 because information would be collected more frequently. Net present values and annualized costs are significantly less for Option 14 because information would be collected only once.

Table III-27. Incremental Net Present Values and Annualized Costs of Amendment Options Discounted at Three Percent (million 1997\$)

Option	First Year Cost		Net Present Value ^a		Annualized Cost	
	Low	High	Low	High	Low	High
Threshold Options						
Option 1	\$69.2	\$91.2	\$271.1	\$371.7	\$18.2	\$25.0
Option 2	\$58.3	\$76.6	\$225.8	\$309.1	\$15.2	\$20.8
Option 3	\$52.1	\$72.7	\$201.4	\$292.6	\$13.5	\$19.7
Option 4	\$47.9	\$65.4	\$183.7	\$261.2	\$12.3	\$17.6
Option 5	\$42.3	\$62.0	\$161.5	\$247.3	\$10.8	\$16.6
Option 6	\$38.1	\$54.8	\$143.8	\$215.9	\$9.7	\$14.5
Option 7	\$35.1	\$51.4	\$131.3	\$201.8	\$8.8	\$13.6
Option 8	\$27.7	\$43.4	\$101.1	\$167.5	\$6.8	\$11.3
Option 9	\$38.1	\$54.8	\$174.2	\$250.9	\$11.7	\$16.9
Reporting Exemption Options						
Option 4	\$47.9	\$65.4	\$183.7	\$261.2	\$12.3	\$17.6
Option 10	\$54.4	\$71.5	\$210.4	\$287.9	\$14.1	\$19.3
Option 11	\$36.8	\$50.4	\$137.6	\$195.8	\$9.2	\$13.2
Reporting Cycle Options						
Option 4	\$47.9	\$65.4	\$183.7	\$261.2	\$12.3	\$17.6
Option 12	\$47.9	\$65.4	\$268.8	\$413.2	\$18.1	\$27.8
Option 13	\$47.9	\$65.4	\$353.6	\$512.8	\$23.8	\$34.5
Option 14	\$47.9	\$65.4	\$46.5	\$63.5	\$3.1	\$4.3

Note: Incremental costs may not calculate exactly due to rounding.

^a NPV determined for a 20 year period.

Table III-28. Total Net Present Values and Annualized Costs of IUR Compliance, with Different Amendment Options Discounted at Three Percent (million 1997\$)

Option	First Year Cost		Net Present Value ^a		Annualized Cost	
	Low	High	Low	High	Low	High
Baseline	\$13.9	\$21.9	\$63.7	\$100.5	\$4.3	\$6.8
Threshold Options						
Option 1	\$83.1	\$113.2	\$334.8	\$472.2	\$22.5	\$31.7
Option 2	\$72.2	\$98.6	\$289.6	\$409.6	\$19.5	\$27.5
Option 3	\$66.0	\$94.6	\$265.1	\$393.1	\$17.8	\$26.4
Option 4	\$61.8	\$87.4	\$247.4	\$361.8	\$16.6	\$24.3
Option 5	\$56.2	\$84.0	\$225.2	\$347.8	\$15.1	\$23.4
Option 6	\$52.0	\$76.7	\$207.4	\$316.4	\$13.9	\$21.3
Option 7	\$49.0	\$73.4	\$195.0	\$302.3	\$13.1	\$20.3
Option 8	\$41.6	\$65.4	\$164.8	\$268.0	\$11.1	\$18.0
Option 9	\$52.0	\$76.7	\$237.9	\$351.4	\$16.0	\$23.6
Reporting Exemption Options						
Option 4	\$61.8	\$87.4	\$274.4	\$361.8	\$16.6	\$24.3
Option 10	\$68.4	\$93.5	\$274.1	\$388.4	\$18.4	\$26.1
Option 11	\$50.7	\$72.4	\$201.3	\$296.3	\$13.5	\$19.9
Reporting Cycle Options						
Option 4	\$61.8	\$87.4	\$274.4	\$361.8	\$16.6	\$24.3
Option 12	\$61.8	\$87.4	\$329.0	\$508.2	\$22.1	\$34.2
Option 13	\$61.8	\$87.4	\$413.8	\$607.8	\$27.8	\$40.8
Option 14	\$61.8	\$87.4	\$60.0	\$84.8	\$4.0	\$5.7

Note: Total Costs may not calculate exactly due to rounding.

^a NPV determined for a 20 year period.

2. Cost Analysis for Threshold and Reporting Cycle Options

A model was developed to calculate compliance costs for future reporting cycles in real terms for the baseline case and for each of the regulatory options under the proposed IUR amendments. To calculate industry burden, the estimated number of reports and sites for the baseline and for each option was multiplied by the unit costs for completing each of the tasks identified in Section B of this chapter. Incremental costs were then determined by subtracting the compliance costs associated with the baseline from the compliance costs for each reporting option.

Figure III-1 provides a graphic representation of the allocation of IUR Reporting Costs expected under the proposed amendments in relation to the original IUR. The relative costs for industry for reporting facility and manufacturing information and use and exposure information are presented in relation to the expected number of reports at the 10,000 pound, 25,000 pound, and 100,000 pound reporting thresholds. As the figure indicates, some chemicals that are originally reported under the IUR (those with a production volume between 10,000 pounds and 25,000 pounds) would not be required to report under the proposed IUR amendments. In addition, chemicals manufactured above a 25,000 pound threshold would be required to report additional facility and manufacturing information and those above a 100,000 pound threshold would report processing and use information, as well as the facility and manufacturing information.

Other aspects of the industry burden calculation are as follows:

- all industry compliance costs are incurred in the year in which reporting occurs;
- the reporting cycle for the baseline and each of the threshold options is four years; and,
- all costs are presented in first-quarter 1997 dollars, costs begin to be incurred in 1998, and are analyzed for a period of twenty years (i.e., only compliance costs between 1998 and 2017 are considered).

3. Limitations of the Industry Burden Analysis

There are a number of uncertainties that result from the approach and methodology used to model the industry costs associated with the IUR amendments. Some of these uncertainties lead to

Allocation of IUR Reporting Costs

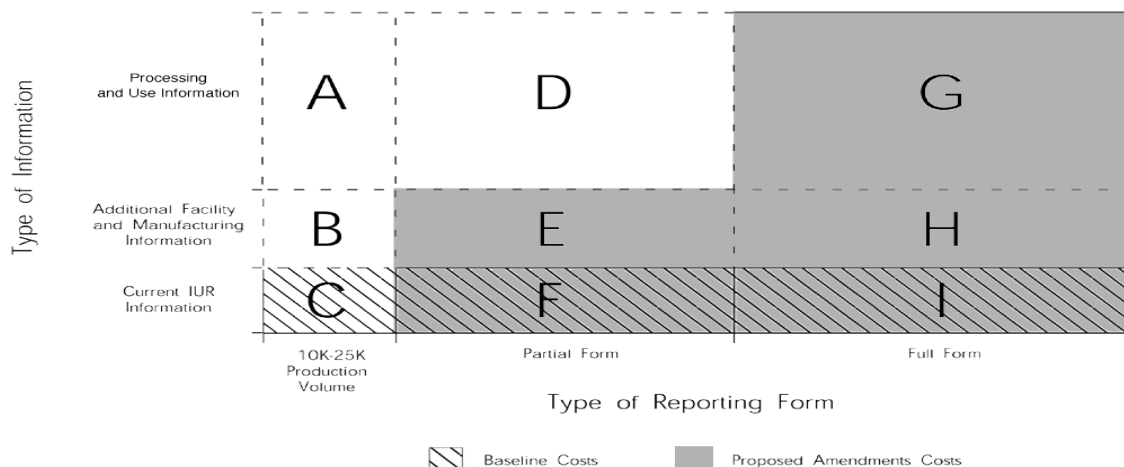


Figure III-1

Identification of Information Reporting Costs:

- A: Processing and use information reporting costs for production volumes between 10,000 and 25,000 pounds. These costs are not incurred under either the existing or amended IUR information requirements.
- B: Additional facility and manufacturing information reporting costs for production volumes between 10,000 and 25,000 pounds. These costs are not incurred under either the existing or amended IUR information requirements.
- C: Baseline reporting costs for production volumes between 10,000 and 25,000 pounds under the existing IUR requirements. These chemicals are excluded from reporting under the amended IUR information requirements.
- D: Processing and use information reporting costs for companies completing the partial form. These costs are not incurred under either the existing or amended IUR information requirements due to either the production volume (under 100,000 lbs) or the partial exemptions.
- E: Facility and manufacturing information reporting costs for companies completing the partial form. These costs are incurred under the proposal but are not incurred under the existing IUR information requirements.
- F: Reporting costs for companies completing the partial form that are incurred under both the existing and the amended IUR information requirements.
- G: Processing and use information reporting costs for companies completing the full form. These costs are incurred under the proposal but are not incurred under the existing IUR information requirements.
- H: Facility and manufacturing information reporting costs for companies completing the full form. These costs are incurred under the proposal but are not incurred under the existing IUR information requirements.
- I: Reporting costs for companies completing the full form that are incurred under both the existing and the amended IUR information requirements.

Summary of Reporting Costs:

Baseline Costs: C+F+I

Incremental Costs of Proposed Amendments: E+H+G

Total Reporting Costs: E+F+G+H+I

Savings: C

overestimates of quantified industry costs. The following points discuss some uncertainties that could significantly impact the results of the analysis:

- The analysis may overestimate the costs of compliance for smaller companies. According to the survey³⁰ (see Appendix D), the average cost of preparing and submitting a report for a large company is \$3,101 to \$4,368, for a medium company is \$3,162 to \$3,509 and for a small company is \$1,408 to \$1,683.³¹ The burden estimates for completion of the other tasks associated with compliance may also be more appropriate for a typical large company. Large companies may have to coordinate various levels of management and technical personnel to prepare the required information, while smaller companies are likely to have less variation in their chemical output and use and a more contained managerial and technical staff. Given the differences between small and large companies, the unit cost estimates presented in this analysis are probably somewhat high for a typical small company.
- It is possible that the cost of supplying the exposure and use information for a small volume chemical with few uses is lower than for a large volume and widely used chemical. For example, if compliance costs for a small-use, low-volume chemical are 1/3 of the compliance costs for a larger-volume, multi-use chemical, a substantial drop in the total expected costs could be possible. Although this analysis attempts to account for this by scaling the burden estimates reported in the industry survey according to company size categories, the average unit cost of compliance presented in this analysis still may not entirely account for these two different scenarios.
- The weighting factors that have been applied to future unit costs are based on an assumed reduction in reporting burden in future reporting cycles. These factors may be high if information for many of the reportable chemicals does not change significantly over time, resulting in overestimates of the industry reporting burden. Conversely, these factors may be too low if changes to the industry are greater than expected or if there is a large turnover in companies reporting or chemicals being reported.
- The estimated number of reports in future reporting cycles, which is an average of the past three IUR reporting cycles, may be an overestimate. The number of reports submitted under the original IUR has continually decreased slightly from reporting cycle to reporting cycle; insufficient data exist to determine if this decrease will continue.
- Insufficient data exist to determine how many sites currently subject to reporting will be affected by the proposal to remove the exemption on inorganic chemicals. It is assumed that in response to this change there will be an increase in the number of sites reporting, rather than an increase in the number of chemicals reported per site. This assumption may overestimate the total cost of the rule, but underestimate the per site cost.
- The analysis assumes that a site only submits one type of report (i.e., full form or partial form). In reality, it is likely that sites will report both full and partial forms. This assumption may significantly over- or underestimate the costs of compliance for a given site, depending on the particular mix of report types.

³⁰ ICF. 1996. *Survey for Estimating the Industry Burden Associated With Collecting Additional Chemical Use Data Under TSCA Section 8 (IUR Amendments)*. OMB Control No. 2070-0034. Conducted for EPA by ICF Incorporated, Washington, D.C.

³¹ As discussed in Appendix D, small companies were identified as having annual sales less than or equal to \$40 million, medium-sized companies as having annual sales greater than \$40 million and less than or equal to \$200 million, and large companies as having annual sales greater than \$200 million.

4. Sensitivity Analysis

Appendix E presents a detailed sensitivity analysis that varies certain assumptions used in the cost analysis to assess the sensitivity of those assumptions. For example, changing the number of reports completed per site affects the costs presented for the proposed option. As shown in Table III-29, the sensitivity analysis for Scenarios 1a and 1b is based on variations in the assumed number of reports per site. For these scenarios, incremental costs are presented only in terms of the effect on per site costs. In addition, Tables III-30 and III-31 present the impacts on incremental, baseline, and total net present value and annualized costs of the proposed IUR amendments using a 7 percent instead of a 3 percent discount rate. More detail on the basis for varying the discount rate is provided in Appendix E.

Table III-29. Results for Sensitivity Around the Number of Reports per Site

Scenario	Reports Per Site	Incremental Cost Per Site (1997\$)	
		Low	High
Proposal	8.4		
Organic Chemicals		\$21,169	\$27,112
Petroleum Streams		\$5,780	\$10,407
Inorganic		\$24,878	\$32,526
Scenario 1a	1		
Organic Chemicals		\$3,790	\$4,747
Petroleum Streams		\$1,958	\$2,758
Inorganic		\$4,533	\$5,849
Scenario 1b	20		
Organic Chemicals		\$48,412	\$62,171
Petroleum Streams		\$11,769	\$22,397
Inorganic		\$56,771	\$74,343

**Table III-30. Incremental Net Present Values and Annualized Costs of Amendment Options
Discounted at Seven Percent (million 1997\$)**

Option	Net Present Value ^a		Annualized Cost	
	Low	High	Low	High
Threshold Options				
Option 1	\$243.6	\$333.6	\$23.0	\$31.5
Option 2	\$203.0	\$277.5	\$19.2	\$26.2
Option 3	\$181.0	\$262.7	\$17.1	\$24.8
Option 4	\$165.1	\$234.6	\$15.6	\$22.1
Option 5	\$145.2	\$222.0	\$13.7	\$21.0
Option 6	\$129.3	\$194.0	\$12.2	\$18.3
Option 7	\$118.1	\$181.3	\$11.1	\$17.1
Option 8	\$91.0	\$150.6	\$8.6	\$14.2
Option 9	\$155.9	\$224.6	\$14.7	\$21.2
Reporting Exemption Options				
Option 4	\$165.1	\$234.6	\$15.6	\$22.1
Option 10	\$189.1	\$258.4	\$17.8	\$24.4
Option 11	\$123.8	\$175.9	\$11.7	\$16.6
Reporting Cycle Options				
Option 4	\$165.1	\$234.6	\$15.6	\$22.1
Option 12	\$226.2	\$347.1	\$21.4	\$32.8
Option 13	\$297.0	\$430.2	\$28.0	\$40.6
Option 14	\$44.8	\$61.1	\$4.2	\$5.8

Note: 1. Option 4 is the proposed option.
2. Incremental costs may not calculate exactly due to rounding.
^a NPV determined for a 20 year period.

Table III-31. Total Net Present Values and Annualized Costs of IUR Compliance, with Different Amendment Options Discounted at Seven Percent (million 1997\$)

Option	Net Present Value ^a		Annualized Cost	
	Low	High	Low	High
Baseline	\$57.0	\$90.0	\$5.4	\$8.5
Threshold Options				
Option 1	\$300.6	\$423.6	\$28.4	\$40.0
Option 2	\$260.0	\$367.5	\$24.5	\$34.7
Option 3	\$238.0	\$352.7	\$22.5	\$33.3
Option 4	\$222.1	\$324.6	\$21.0	\$30.6
Option 5	\$202.2	\$312.0	\$19.1	\$29.4
Option 6	\$186.3	\$284.0	\$17.6	\$26.8
Option 7	\$175.1	\$271.3	\$16.5	\$25.6
Option 8	\$148.0	\$240.6	\$14.0	\$22.7
Option 9	\$213.0	\$314.6	\$20.1	\$29.7
Reporting Exemption Options				
Option 4	\$222.1	\$324.6	\$21.0	\$30.6
Option 10	\$246.1	\$348.4	\$23.2	\$32.9
Option 11	\$180.8	\$265.9	\$17.1	\$25.1
Reporting Cycle Options				
Option 4	\$222.1	\$324.6	\$21.0	\$30.6
Option 12	\$276.7	\$426.8	\$26.1	\$40.3
Option 13	\$347.5	\$509.9	\$32.8	\$48.1
Option 14	\$57.8	\$81.6	\$5.4	\$7.7

^a NPV determined for a 20 year period.

CHAPTER IV. AGENCY COSTS

This chapter provides an analysis of the costs associated with the proposed amendments to the Inventory Update Rule (IUR amendments) expected to be incurred by EPA for establishing and maintaining IUR amendments data. The activities associated with the proposed IUR amendments and the attendant costs are discussed below. The remainder of the chapter is organized as follows:

- Section A outlines the approach used to determine Agency costs, including a description of the methodology;
- Section B discusses the tasks and develops costs attributable to requirements under the original IUR;
- Section C discusses the tasks and incremental costs that would be attributed to requirements under the proposed IUR amendments;
- Section D provides an estimate of total expected Agency costs.

A. Overview and Methodology of Determining Agency Costs of Reporting

This section describes the assumptions and general methodology employed for estimating Agency costs associated with both the original IUR and the proposed IUR amendments. The expected costs include costs attributable to systems development, document processing, contract oversight and management, and publication of forms and materials. Costs related to using the data are not included. The following methodology for developing estimated costs for both the original IUR and proposed IUR amendments was used:

Step 1: Identify the tasks performed for both the original IUR and the proposed IUR amendments;

Step 2: Determine the costs for each activity under the original IUR and the proposed IUR amendments;

Step 3: Determine the estimated total costs for the original IUR and the proposed IUR amendments.

In addition, it should be noted that in developing the cost estimates for determining Agency burden, activities associated with one-time events were distinguished from costs that are incurred annually. This distinction was considered throughout the discussion of individual tasks and is handled directly in the presentation of Agency costs.

B. Agency Tasks and Costs Under the Original IUR - The Baseline

This section describes the Agency tasks required for processing submissions under the original IUR. These tasks, described below in Section 1, include database systems development, Form U processing, document development, and mailings. Section 2 presents an account of the costs incurred by the Agency for each identified task.

1. Description of Tasks Associated with the Original IUR

The tasks associated with the original IUR for which the Agency is responsible are presented under four main categories: database systems development, guidance document development, Form U processing, and additional tasks.

- Database Systems Development and Maintenance -- The Agency is responsible for having adequate information systems in place to support the Chemical Update System (CUS) that serves as the primary data storage medium for IUR collections. For the 1994 collection period, the Agency incurred capital expenses associated with redeveloping CUS for operation on a PC LAN environment, replacing the CBI Mainframe environment of the past. Systems development is a one-time cost for the original IUR.

File servers with appropriate backup are used to contain the IUR databases. In addition, IUR data are tracked via the correspondence tracking system utilized by the Confidential Business Information Tracking System (CBITS) located within the Confidential Business Information Center (CBIC). Hence, a portion of the CBIC overhead is attributable to IUR.

The Agency has plans to improve the quality control of these databases. These plans range from the development of computer programs to check information against previously submitted information and to look for abnormalities in the submitted data to the use of electronic submissions to increase the speed and accuracy of adding information to the database. The cost of these improvements are not included in this analysis as the Agency plans to make these changes regardless of the status of these amendments.

Additional costs associated with recordkeeping include purchasing and maintaining file cabinets and office space to store accumulated records. Estimates of the costs attributable to these activities have not been developed because costs are expected to result from both original IUR and IUR amendments requirements and because these costs are expected to be small.

- Guidance Document Development -- The Agency is responsible for developing guidance for the IUR to assist reporters in complying with IUR requirements. The guidance documents usually are developed by a contractor with oversight by Agency personnel. The costs associated with guidance document development are discussed below under both Extramural Tasks and Tasks Performed by Agency Personnel.
- Form U Processing -- The Agency is responsible for handling processing of IUR submissions. This includes developing standard operating procedures and documentation for all stages in the IUR document life cycle, document receipt and tracking, data input, quality control, file and database maintenance, information security, CBI aggregation policy, data dissemination, and staff training. The various tasks associated with document processing are performed by both Agency personnel and contractors.
- Additional Activities -- The Agency undertakes the publication and printing of the IUR form and other miscellaneous materials. In addition, the Agency is responsible for providing the TSCA

Hotline with standardized responses for frequently asked questions; preparing mailings, mailing lists, and labels; and developing outgoing informational materials.

2. Costs of Tasks Associated with the Original IUR

The Agency incurs costs associated with the original IUR that are attributable to the task areas described above. Costs for tasks in these categories can be divided into those performed by Agency personnel, those performed by contractors, and additional tasks. The costs associated with the development of a database system and the development of a guidance document are assumed to be one-time costs³² that have already been incurred by the Agency.

a. Tasks Performed by Agency Personnel

To estimate the cost of tasks performed by Agency personnel, in terms of full time equivalents (FTEs), the number of FTEs and the GS-level required to perform each task were determined. The salary rates were taken from Salary Table No. 96-DCB from the U.S. Office of Personnel Management (OPM 1996). The salary rates are presented by GS-level and Step. For this analysis, a Step 3 is assumed for all FTEs.

The original IUR requires one FTE, GS-12 at a salary of \$47,423 to perform quality control of data entry. One FTE, GS-13 at a salary of \$56,392 is required to perform data processing, systems development, and contract oversight & management. The annual cost of tasks performed by Agency personnel sums to two FTEs for a total of \$103,815. In addition, 0.5 FTE, GS-13 at a salary of \$56,392 is required to oversee the development of a guidance document for the IUR. The cost associated with this task is a one-time cost. After accounting for fringe benefits and overhead, agency personnel tasks cost \$171,264 annually, with one-time costs of \$46,515 (IMD 1996a, U.S. EPA 1996b).³³

b. Extramural Tasks

Extramural tasks are described as those performed by contractors. Under the original IUR, annual document receipt and tracking and data entry costs amount to \$40,000; backup systems

* One time costs of approximately \$328,515 have been incurred for development of the current guidance document, development of the current database systems, and hardware and software expenses. These costs are not part of the baseline annual Agency costs.

³³ Based on an additional 41 percent of the salary for fringe benefits and 17 percent of the salary plus fringe benefits for overhead (U.S. EPA 1997a).

operations costs are \$25,000, annually. Hence, the total annual costs associated with extramural tasks for the original IUR are equal to about \$65,000. In addition, hardware and software costs, systems development, and the development of a guidance document for the original IUR represented a one-time cost of approximately \$282,000 (IMD 1996a, U.S. EPA 1996b).

c. Additional Tasks

Additional tasks include publication and printing of forms and materials, provision of supplies and materials for the hotline, staffing, and costs associated with mailings. IUR informational materials that would need to be printed include guidance documents, policy letters, and current and past forms. The hotline staff (contractor) are responsible for responding to phone calls, faxes, letters, and e-mail regarding questions about the IUR and requests for materials. In addition, the hotline staff performs all activities associated with mailing requested materials and bulk mailings.

Under the original IUR, it is estimated that the cost of publishing forms, developing other materials, including guidance documents and policy letters, is approximately \$1,000 annually. In addition, approximately seven percent of the calls received and handled by the TSCA hotline can be attributed to the IUR. Therefore, the portion of hotline costs that are attributable to the IUR is estimated to be about seven percent of the hotline budget, or approximately \$40,200, annually. Costs associated with preparing mailings in response to information requests under the original IUR are approximately \$400 annually. This cost is based on approximately 21 mailings per month at a cost of \$1.50 each. Therefore, the total estimated cost for provision of supplies and materials, as well as operation of the hotline to handle IUR related calls, is estimated to be \$41,600 (U.S. EPA 1996g, U.S. EPA 1998b).

3. Total Baseline Agency Costs

Baseline Agency costs are divided into two categories: total annual costs and total one-time costs. The total one time costs under the original IUR are sunk costs. The annual costs of the original IUR are incurred each year reports are submitted. The total annual costs under the original IUR are presented in Table IV-1.

The total annual cost associated with the original IUR is approximately \$280,000. This cost includes the cost of Agency tasks (quality control of data entry, data processing, systems development,

Table IV-1. Estimated Annual Costs for Determining Agency Costs for the Original IUR

Task	Original IUR Costs
<i>Tasks Performed by Agency Personnel</i>	
Quality Control of Data Entry	\$78,234 (1 FTE, GS-12)
Data Processing, Systems Development, and Contract Oversight & Management	\$93,030 (1 FTE, GS-13)
Sub-total	\$171,264
<i>Extramural Tasks (contractor)</i>	
Document Receipt & Tracking and Data Entry	\$40,000
Backup Systems Operations	\$25,000
Sub-total	\$65,000
<i>Additional Tasks</i>	
Publication and Printing Forms & Materials	\$1,000
Hotline	\$40,200
Mailing	\$400
Sub-total	\$41,600
Total Annual Cost	\$277,864

Note: All costs associated with FTEs include 41 percent fringe benefits and 17 percent overhead.

Sources: OPM 1996, U.S. EPA 1997a, IMD 1996a, U.S. EPA 1996g, U.S. EPA 1998b.

Table IV-2. Estimated One-Time Costs for Determining Agency Costs for the Original IUR^a

Task	Original IUR Costs
<i>Tasks Performed by Agency Personnel</i>	
Guidance Document Development	\$46,515 (0.5 FTE, GS-13)
Sub-total	\$46,515
<i>Extramural Tasks (contractor)</i>	
Systems Development	\$190,000
Hardware & Software	\$42,000
Guidance Document Development	\$50,000
Sub-total	\$282,000
Total One-Time Cost	\$328,515

Note: All costs associated with FTEs include 41 percent fringe benefits and 17 percent overhead.

^a Systems development, hardware/software, and guidance document development costs under the original IUR are considered to be sunk costs and are not included in the estimates of total costs associated with the original IUR. These costs are presented, however, for the purposes of developing incremental costs for the IUR amendments relevant to current requirements. These one-time costs total \$328,515.

Sources: U.S. EPA 1996b, OPM 1996, IMD 1996a, U.S. EPA 1997a.

and contract oversight and management), extramural tasks (document receipt and tracking, data entry, and backup systems operations), and additional tasks (publication and printing forms and materials, the hotline, and mailings). The total one-time cost of \$328,515 is attributable to guidance document development and costs associated with systems hardware and software, as presented in Table IV-2 (IMD 1996a, U.S. EPA 1996b).

C. Agency Tasks and Costs Under the Proposed IUR Amendments

This section describes the Agency tasks required for processing submissions under the proposed IUR amendments. These tasks, described below, include database systems development, Form U processing, document development, and mailings. Section 2 presents an account of the costs incurred by the Agency for each identified task.

1. Description of Tasks Associated with the IUR Amendments

The tasks that must be performed under the proposed IUR amendments consist largely of an expanded effort for tasks already undertaken for the original IUR. Thus, the task descriptions presented in Section B.1 generally do not change. However, the magnitude of any specific task may change. One change worthy of explanation involves database systems development and maintenance. A description of particular modifications required by the IUR amendments is provided below:

- Database Systems Development and Maintenance -- In addition to the tasks identified for this category under Section B.1, the IUR amendments would require that the database be expanded to handle the additional reporting requirements of the IUR amendments. The cost estimate for the IUR amendments accounts for further expenses associated with the expansion of the database system. Recreating the CUS entails the following tasks:
 - procurement of new hardware and software;
 - contractor-supported programming for database redesign;
 - development of new input modules to facilitate scanning and text recognition of paper versions, these include a manual data entry module, an electronic (ASCII) version of the form, and subsequent upload modules;
 - creation of retrieval modules that standardize reports; and
 - incorporation of CBI protection into the design of the system.

A change in the magnitude of each task described in Section B.1 is reflected in the number of Agency personnel or contractors required and/or in the incremental cost.

2. Incremental Costs of Tasks Associated with the IUR Amendments

This section describes the costs associated with the additional tasks performed under the IUR amendments. Because tasks are performed by both Agency personnel and contractors, the costs are organized as: tasks performed by Agency personnel, extramural tasks performed by contractors, and additional tasks (e.g., hotline administration and production of informational materials).

a. Tasks Performed by Agency Personnel (FTEs)

As mentioned in an earlier section, the cost of tasks performed by Agency personnel, in terms of full time equivalents (FTEs), was estimated using the number of FTEs and the GS-level required to perform each task. The salary rates were taken from Salary Table No. 96-DCB from the U.S. Office of Personnel Management (OPM 1996). The salary rates are presented by GS-level and Step. For this analysis, a Step 3 is assumed for all FTEs.

The IUR amendments would require one additional FTE, GS-12 at a salary of \$47,423, to perform quality control of data entry and an additional FTE, GS-13 at a salary of \$56,392, to perform data processing, systems development, and contract oversight and management, relative to the original IUR. The cost of tasks performed by these personnel for the proposed IUR amendments would amount to incremental salary costs of \$103,815. The development of a guidance document for the amended IUR would require 0.5 FTE at a salary of \$56,392. This cost would be a one-time cost. Once fringe benefits and overhead are added, this represents incremental annual costs of \$171,264 (IMD 1996a, U.S. EPA 1996b, U.S. EPA 1997a).

b. Extramural Tasks

As explained in Section B.2.b, extramural tasks are described as those performed by contractors. For the proposed IUR amendments, document receipt and tracking and data entry would increase by approximately \$40,000; backup systems operations cost would double, causing an incremental cost of \$25,000. Hence, the annual incremental costs of extramural activities for the IUR amendments is estimated to be about \$65,000. Compared to the original systems development and hardware/software costs, the one-time costs of hardware and software acquisition, systems development, and the development of a new guidance document would require a one-time incremental cost of \$203,000. This incremental cost is the one-time cost for conducting the necessary systems and

hardware/software upgrades to handle submissions under the IUR amendments (IMD 1996a, U.S. EPA 1996b).

c. Additional Tasks

Additional tasks associated with the proposed IUR amendments include publication and printing of forms and materials, provision of supplies and materials for the hotline, staffing, and costs associated with mailings. IUR informational materials that would need to be printed include guidance documents, policy letters, and current and past forms. As with the original IUR, the hotline staff (contractor) is responsible for responding to phone calls, faxes, letters, and e-mail regarding questions about the IUR and requests for materials. In addition, the hotline staff performs all activities associated with mailing requested materials and bulk mailings.

Under the proposed IUR amendments, it is estimated that the incremental costs of providing forms and materials would be approximately \$4,000. In addition to these costs, it is anticipated that the costs associated with operating the TSCA hotline to handle IUR-related calls will increase by \$30,000 in the first year of reporting under the proposed amendments. No incremental costs are expected for every year thereafter because it is estimated that the annual hotline cost associated with the IUR will return to \$40,200 (the original cost of this activity under the original IUR). The cost associated with preparing mailings under the IUR amendments is estimated to increase by \$5,100 in the first year, based on approximately 3,400 more mailings than the original IUR at \$1.50 each for a peak period of 6 months and then a return to the current rate of mailings for the remainder of the year. Thus, the annual incremental costs of preparing mailings under the proposed IUR amendments is estimated to be zero in future years. Therefore, the incremental costs for additional tasks under the IUR amendments is approximately \$4,000 annually while the costs estimated for the first reporting year are \$39,100 (U.S. EPA 1996g, U.S. EPA 1998b).

3. Incremental Agency Costs of the Proposed IUR Amendments

Agency costs are divided into two categories: total annual costs and total one-time costs. Under the proposed IUR amendments, the one-time costs would be incurred in the first reporting year. The annual cost would be incurred for every year thereafter. The total annual incremental costs under the proposed IUR amendments are presented in Tables IV-3 and IV-4.

The incremental Agency cost associated with the proposed IUR amendments in the first year of reporting is \$524,879 (this includes the one time costs associated with the amendments). The annual incremental cost is \$275,364.

D. Total Agency Costs

The total annual Agency cost associated with the proposed amended IUR is estimated to be approximately \$550,000, attributable to the same tasks as the total annual costs under the original IUR. The total first year cost, including one-time costs, associated with the proposed IUR amendments is estimated at approximately \$802,743. This cost would be incurred in the first year of reporting under the amendments. Total Agency costs for each of the tasks described in this chapter are presented in Tables IV-5 and IV-6.³⁴

³⁴ The values in Table IV-6 are identical to the values in Table IV-4, because the baseline one-time costs are considered sunk costs and are not included in the calculation of total one-time costs under the amended IUR. Incremental one-time Agency costs and total one-time Agency costs are therefore equal.

Table IV-3. Estimated Incremental Annual Costs for Determining Agency Costs for the Proposed IUR Amendments

Task	IUR Amendment Costs
<i>Tasks Performed by Agency Personnel</i>	
Quality Control of Data Entry	\$78,234 (1 FTE, GS-12)
Data Processing, Systems Development, and Contract Oversight & Management	\$93,030 (1 FTE, GS-13)
Sub-total	\$171,264
<i>Extramural Tasks (contractor)</i>	
Document Receipt & Tracking and Data Entry	\$40,000
Backup Systems Operations	\$25,000
Sub-total	\$65,000
<i>Additional Tasks</i>	
Publication and Printing Forms & Materials	\$4,000
Hotline ^a	\$30,000
Mailing ^a	\$5,100
Sub-total	\$39,100
Total Annual Cost	\$275,364

Note: All costs associated with FTEs include 41 percent fringe benefits and 17 percent overhead.

^a These costs are the costs that would be incurred in the first year of reporting under the proposed IUR amendments. No incremental costs are expected for these tasks in subsequent years.

Sources: U.S. EPA 1997a, OPM 1996, IMD 1996a, U.S. EPA 1996g, U.S. EPA 1998b.

Table IV-4. Estimated Incremental One-Time Costs for Determining Agency Costs for the Proposed IUR Amendments

Task	IUR Amendment Costs
<i>Tasks Performed by Agency Personnel</i>	
Guidance Document Development	\$46,515 (0.5 FTE, GS-13)
Sub-total	\$46,515
<i>Extramural Tasks (contractor)</i>	
Systems Development	\$95,000
Hardware & Software	\$8,000
Guidance Document Development	\$100,000
Sub-total	\$203,000
Total One Time Cost	\$249,515

Note: All costs associated with FTEs include 41 percent fringe benefits and 17 percent overhead.

Sources: U.S. EPA 1997a, OPM 1996, IMD 1996a, U.S. EPA 1996b.

Table IV-5. Estimated Total Annual Agency Costs for the Amended IUR

Task	Total Amended IUR Costs
Tasks Performed by Agency Personnel	
Quality Control of Data Entry	\$156,468 (2 FTE, GS-12)
Data Processing, Systems Development, and Contract Oversight & Management	\$186,060 (2 FTE, GS-13)
Sub-total	\$342,528
Extramural Tasks (contractor)	
Document Receipt & Tracking and Data Entry	\$80,000
Backup Systems Operations	\$50,000
Sub-total	\$130,000
Additional Tasks	
Publication and Printing Forms & Materials	\$5,000
Hotline ^a	\$70,200
Mailing ^a	\$5,500
Sub-total	\$80,700
Total Annual Cost	\$553,228

Note: All costs associated with FTEs include 41 percent fringe benefits and 17 percent overhead.

^a These costs are the costs that would be incurred in the first year of reporting under the proposed IUR amendments. Costs are expected to be equal to costs under the original IUR in subsequent years.

Sources: U.S. EPA 1997a, OPM 1996, IMD 1996a, U.S. EPA 1996g, U.S. EPA 1998b.

Table IV-6. Estimated Total One-Time Agency Costs for the Amended IUR

Task	Total Amended IUR Costs
Tasks Performed by Agency Personnel	
Guidance Document Development	\$46,515 (0.5 FTE, GS-13)
Sub-total	\$46,515
Extramural Tasks (contractor)	
Systems Development	\$95,000
Hardware & Software	\$8,000
Guidance Document Development	\$100,000
Sub-total	\$203,000
Total One Time Cost	\$249,515

Note: All costs associated with FTEs include 41 percent fringe benefits and 17 percent overhead.

Sources: U.S. EPA 1997a, OPM 1996, IMD 1996a, U.S. EPA 1996b.

CHAPTER V. IUR AMENDMENTS BENEFITS ASSESSMENT

As discussed in Chapter II, neither EPA nor the public have access to the information needed to effectively and accurately identify the potential risks of chemicals in production or use in the United States. The benefits from this proposed rule stem from filling this information void. Some of the benefits are immediate - information is provided which enables EPA and others to identify chemicals of potential concern. Some of the benefits are in the future - once the chemicals of concern are identified, EPA or others must take additional action to further characterize and to address the associated risks, thereby garnering the benefits associated with reducing those risks.

Effective screening of human health and other risks potentially posed by chemicals depends critically on having sufficient information to characterize a chemical's uses and to predict or model potential exposure. The current approach, using production volume information supplemented by relatively scarce public sources of information, is not sufficient for identifying chemical exposures and human risks, even at the screening level. EPA expects that the collection and compilation of additional manufacturing, processing, use, and exposure information, when combined with hazard data, will provide EPA with the data it needs to conduct effective risk-based screening. EPA believes that a better compilation of use and exposure data will enable its programs to more accurately predict the magnitude and nature of ecosystems and human populations potentially exposed; the concentrations, frequency, and duration of exposures; and a host of other specific factors related to potential chemical exposures. With the additional information, EPA will be able to pre-screen chemicals to identify whether additional risk screening and management steps may be needed.

Ultimately, because the process by which chemicals enter and proceed through EPA's risk screening programs will be enhanced by the availability of data on exposure, EPA expects to more effectively and expeditiously reduce the risks posed by these chemicals, which will have positive consequences for human and ecosystem health.

Additional benefits accrue from certain changes in report timing and information elements that enhance consistency and linkages with other EPA databases. EPA also expects a reduction in the number of CBI claims by submitters, more accurate chemical tracking, and an increased ability to

anticipate industry trends. Finally, the proposed removal of one reporting exemption and the addition of other partial reporting exemptions are expected to provide an increase in net benefits by reducing costs more than any benefits are reduced. In other words, benefits associated with information collected on the partial reporting exemption chemicals is expected to be less than the costs associated with collecting that information, therefore resulting in an increase in net benefits.

The social benefits resulting from the proposed amendments are qualitatively discussed in this chapter. This chapter is organized as follows:

- Section A contains a review of the benefits associated with improving EPA's chemical screening accuracy and timeliness, Section B focuses on the benefits of less frequent CBI claims, Section C contains an analysis of the benefits associated with proposed changes in certain exemptions, Section D focuses on certain administrative changes and related benefits, and Section E contains a brief analysis of the impact of each specific option on the benefits of the amendments.

A. Benefits from Use and Exposure Data

The use and exposure data collected through these amendments will fill an existing information void; neither the EPA nor the public have access to these data.³⁵ Use and exposure data will allow EPA to improve its chemical screening process, enabling the identification of chemicals of potential concern due to specific uses or exposures, the earlier identification of potentially risky chemicals, and a more effective screening process and chemical management program. EPA will be able to provide the public with any non-CBI information and with the results of any analyses. The public will get risk information they previously did not have - and they will get it sooner.

The amended IUR data will allow EPA to pre-screen chemicals, allowing a quicker and more comprehensive risk screening to occur. In addition, because better data will be available for the pre-screening process, EPA will be able to effectively target the chemicals referred to a more detailed screening process, thereby reducing the number of more detailed reviews that result in chemicals dropping out of the risk management process due to a low level of concern. Consequently, appropriate

³⁵ Databases and the literature sources commonly reviewed by EPA are described in Appendix B.

chemicals will enter EPA's risk management programs sooner, enabling EPA to disseminate risk information to the public that they otherwise would not have had or allowing EPA to take other necessary actions to reduce the incidence of morbidity and mortality from chemical exposures. In addition to identifying potential risk situations in a more effective manner, this information allows EPA to operate more efficiently, making better use of the available resources. Not only will better targeting of projects occur, but EPA will reduce the resources spent on the projects which do not lead to real risk reduction. Other risk management programs and activities will also benefit from the available use and exposure data. Although EPA expects that OPPT will be the largest user of the data, a number of other Federal, state, public group, and industry programs will benefit from the information, as well.

Another benefit of the IUR amendments is the facilitation of database linkages. The enhanced facility identification information and the changes to calendar year reporting will improve the ability to combine IUR data with other information. This will lead, in some cases, to the development of a more complete picture of the risks posed by these chemicals. In addition to identifying risks, EPA will be able to use the use and exposure-related data, combined with a source of release data such as TRI, to check the validity of various models. This will allow EPA to do a better job of predicting exposures for all the other chemicals that do not have exposure data. As EPA improves its use of data and improves the accuracy of its exposure predictions, society benefits through the EPA's use and dissemination of improved information, enabling both the EPA and the public to make decisions based upon that improved risk information.

Another benefit of the IUR amendments is the reduction in the number of CBI claims. Currently, a great deal of the information reported through the IUR is claimed as TSCA CBI. These claims restrict the usefulness of information to EPA and other users. Two proposals are expected to reduce the number of CBI claims. The proposed up-front substantiation requirement forces the reporter to more carefully consider the facility identification CBI claim. The proposed production volume range CBI checkbox allows the reporter to determine if the production volume range is CBI, separate from the CBI status of the exact production volume. The third proposal reduces the amount of information remaining CBI over time. The proposed reassertion requirement requires the reporter to review past CBI claims and determine if they are still valid. If CBI protection is no longer required, the information will no longer be treated as CBI. These changes increase the amount of information available to the public and other

users and gives the EPA more flexibility in its use of the information. EPA expects that the remaining CBI claims will be essential and will address real concerns, as opposed to some past CBI claims that were based more on habit than necessity.

The following sections review OPPT's current risk-screening programs and chemical management programs, and describe the benefits these programs will gain from the enhanced information. They also describe how the information can be used by other programs and other agencies.

1. Benefits to OPPT Risk Pre-Screening, Screening, and Management Programs

OPPT has a multifaceted approach to managing chemical risks, as illustrated in Figure V-1. Chemicals enter OPPT's system by a number of methods - pre-screening by OPPT, a request by the Interagency Testing Committee, or a request by the public. The chemicals then go through one of several more detailed screening programs, such as the RM1, Master Testing List (MTL) or Use Cluster Scoring System (UCSS) programs. Depending on the outcome of these screening processes, next steps may include entering one of EPA's risk management programs. Each of these phases, and the benefits derived from the proposed use and exposure information, are examined below.

a. Expected Use of Data

EPA will use the exposure related data to estimate potential exposures. Some of the ways in which the specific information collected through these amendments would assist in the risk pre-screening, screening, and management processes are identified below. Additional information on the usefulness of this information can be found in the EPA report entitled "Inventory Update Rule (IUR) Technical Support Document: Exposure-Related Data Useful for Chemical Risk Screening, Volume I."

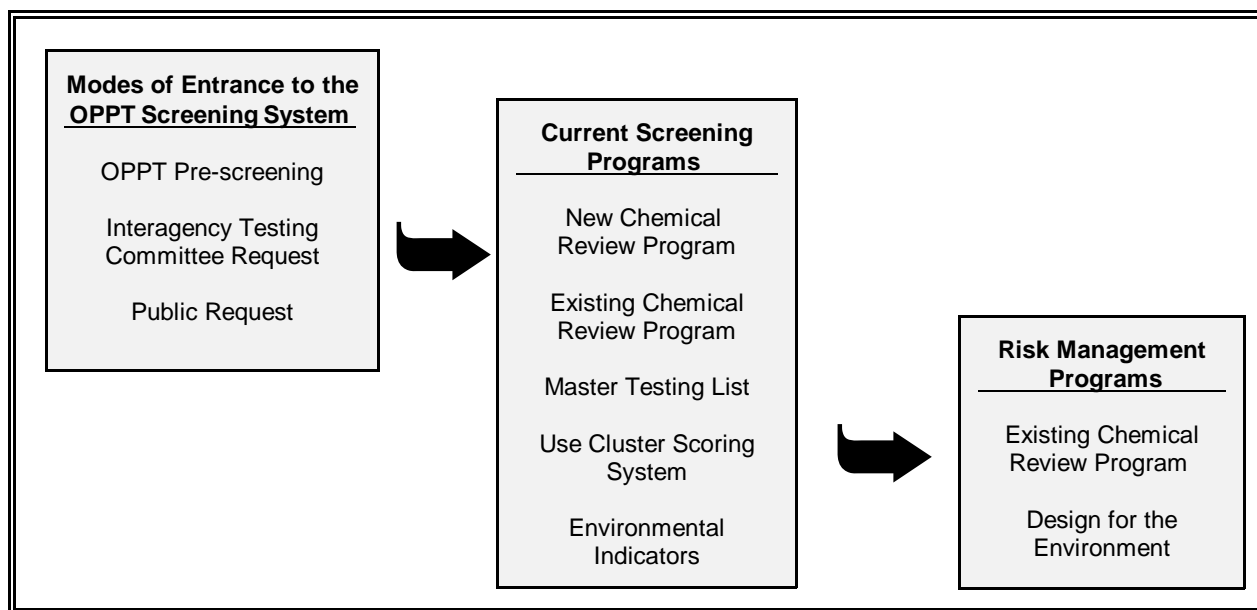
- Number of Potentially Exposed Workers -- Estimates of the number of workers potentially exposed to specific chemicals would be used to develop worker exposure scenarios. The number of workers is combined with the chemical function, the chemical form, the chemical concentration, and other information to develop these scenarios.
- NAICS Code -- The NAICS code enables EPA to sort and screen information by industry sector. Specific industry sectors often have particular ways in which they handle, use or manage chemicals; these ways affect the potential for exposures. As part of the risk screening process, EPA can also identify those industries which might be good candidates for pollution prevention and control activities.
- Function Code -- The industrial function of a chemical substance can be an important indicator of potential chemical exposures - to the workers, the environment, and the general population. It will also be useful for estimating the potential frequency and duration of exposure.

- Known Commercial or Consumer End-uses -- Information on the use of chemicals in commercial and consumer end-use categories would be used to estimate the potential exposure. Generally, these populations are regarded as large and not well protected.
- Maximum Concentration -- Information on the maximum concentration of a chemical present at a manufacturing or processing site, or used for commercial or consumer purposes, would be used to estimate the potential level of exposure.
- Number of Sites -- Information on the number of sites where a chemical is manufactured or processed will provide information on the level of exposure potential for workers and the community in general.

b. Benefits to Chemical Risk Screening and Management Programs

OPPT uses a number of tools to manage and evaluate chemical risk. These tools include various levels of risk screening and subsequent management. Risk screening involves a broad look at potential hazards, exposures, and releases based on production volume, patterns of use, and the number and types of potentially exposed populations. Risk screening is less detailed and focussed, and requires less data, than risk assessment.

Figure V-1. Flow of Chemicals Through OPPT's Screening and Risk Management Programs



OPPT uses two levels of screening - pre-screening and screening, as depicted in Figure V-1. In these efforts, OPPT currently combines hazard (when known) and production volume information to evaluate chemicals for risk. By using production volume as a proxy for exposure, however, EPA is not incorporating other factors involved in determining exposure. These factors include chemical use, the number of potentially exposed workers and consumers, the number of use sites, chemical concentration, and production and use exposure controls. Consequently, EPA has recognized that additional data including detailed information on exposure scenarios are needed to adequately pre-screen and screen

chemicals on the basis of risk. As described in Box V-1, the proposed IUR amendments will allow for enhanced information collection, thereby benefitting EPA's chemical risk screening programs and increasing the efficiencies of the tools used in these programs.

Better risk screening ultimately generates opportunities for improved risk management by EPA and other entities. Box V-1 also presents OPPT risk management programs that might benefit from the greater scope and depth of data the IUR amendments will produce, including the Existing Chemical review process and various pollution prevention, risk reduction, and chemical testing programs, such as the Design for the Environment (DfE), and the Chemical Testing Program. EPA expects that the exposure data collected through the proposed amendments also would be useful to a variety of other OPPT programs or initiatives, including the Source Reduction Review Project, §8(e)/CAP activities, the New Chemicals Program, and TSCA §9 referrals.

The additional data generated by the proposed IUR amendments can expedite and improve risk determinations and help OPPT's chemical risk screening and risk management programs to become better focussed and more efficient. Table V-1 summarizes the potential benefits to EPA's pre-screening, screening, and risk management programs from the data proposed to be collected under the IUR amendments. The importance of each information element to each of the programs is indicated by the number of check marks in the table. Agency activities could achieve risk reductions and cost savings through:

- more rapid identification of potentially high risk situations, and more effective goal setting and targeting of resources in regulatory and non-regulatory activities;

Box V-1. EPA Tools to Evaluate and Manage Chemical Risk

Risk Pre-Screening. OPPT pre-screens chemicals on the TSCA Inventory to identify potential risks and determine whether more detailed screening analyses should be undertaken through the RM1 program. With the data currently available, EPA does not have the information needed to effectively and systematically pre-screen some of the chemicals on the inventory. Data collected as a result of this proposal would improve the Agency's ability to provide a more accurate pre-screen of chemicals in commerce, allowing the Agency to focus its chemical screening programs and to identify risky situations earlier than otherwise possible. This would allow EPA to expend resources more efficiently and reduce the number of occasions where resources are allocated for assessment of chemicals that ultimately pose low risk.

Existing Chemicals Review Program. The Existing Chemicals review program conducts detailed analyses of high risk chemicals and develops strategies to reduce or eliminate the exposure risks. Chemicals are first screened to identify those that (1) require additional testing, (2) present potentially significant risk-management concerns, or (3) do not currently require further review. Use and exposure data collected through the proposed IUR amendments would contribute to this risk management program in several ways. First, improved screening prior to RM1 would lead to a quicker identification of chemicals of concern and more appropriate entry into EPA's chemical management programs. Second, the proposed IUR amendments would provide readily obtainable initial use and exposure information for these chemicals, significantly improving the efficiency and effectiveness of RM1 screening. Finally, by effectively weeding out the lower risk chemicals sooner, EPA would be able to focus efforts on higher risk chemicals.

Environmental Indicators. The OPPT has created a computer model that can trace the potential impacts of Toxic Release Inventory (TRI) chemical emissions on human health and the environment. The model can aid in the identification of chemicals of significant risk. The Indicators reveal how the impacts of the TRI chemical releases change each year. Factors considered in the model include TRI release and transfer volumes, chronic toxicity, exposure potential, and affected populations. The proposed IUR amendments would provide another source of the chemical data that are used by the model to determine outputs such as pounds of release and surrogate exposure.

Use Cluster Scoring System (UCSS). The Use Cluster Scoring System (UCSS) identifies potential risks of chemical substances used in similar applications, or "use clusters." This system enables the Agency to view the risks of a given chemical substance in the context of the risks presented by related products on the market and allows the Agency to establish regulatory review priorities for those use clusters. However some of the UCSS data sources are outdated and estimating methodologies are speculative. The proposed amendments would create a database providing additional information that would allow the Agency to provide more accurate screening level estimates for use clusters, targeting Agency programs to areas currently needing attention. It will also enable the Agency to more easily conduct broader chemical screening analyses across several industries.

Existing Chemicals Testing. TSCA §4 empowers EPA to require manufacturers and processors of chemicals to test the chemicals they manufacture and process to obtain hazard data necessary to assess the chemical's risks. EPA must make findings under either §4(a)(1)(A) ("A" finding) or §4(a)(1)(B) ("B" finding) before testing may be required of a manufacturer or processor. The A finding permits EPA to require testing on a "may present" risk basis; the B finding can be made on an exposure basis. For the B finding, use and exposure data would be a critical input when no hazard data are available to indicate a chemical's toxicity. In addition, OPPT uses the Master Testing List (MTL) of chemicals identified by the Agency as having inadequate data for health and/or environmental risk assessments. OPPT uses the MTL to establish priorities for chemical testing, keep the public informed, and solicit input from industries on specific chemical exposure and risk assessment needs and encourage them to perform testing. IUR data would facilitate these efforts by targeting testing needs to situations in which potential risky exposures are known to occur, thereby increasing the efficiency of efforts in these programs and facilitating earlier completion of critical testing needs.

Screening Information Data Set (SIDS). SIDS is a voluntary program, conducted under the auspices of the OECD, which allows member countries to share the burden of testing internationally traded large production volume chemicals. The U.S. is responsible for testing of 25 percent of the chemicals identified for the Program. The information needed is collected by industry sponsors, however the data elements collected may not be consistent across sponsors, and some companies may not participate in developing information. The proposed amendments would provide many key needs for exposure data and would provide a consistent database of information from manufacturers and importers. This information would increase the program's efficiency by helping to identify chemicals requiring additional testing or assessment while excluding those with low domestic exposure. A better exposure database would also improve evaluation of potential risk in the assessment reports prepared at the end of the SIDS process.

Design for the Environment (DfE). The Design for the Environment (DfE) program incorporates principles and strategies from both the Existing Chemicals review program and the UCSS, by focusing on specific chemical uses and establishing partnerships with industry to develop voluntary long-range plans for risk management. The exposure-related data collected through the proposed IUR amendments would help to identify use cluster candidates for this program. It would also provide the initial assessment of exposures and help identify potential substitutes, and could be used to assist in ranking activities, identifying high risk areas, and developing realistic approaches for reducing risk.

- identification of potentially high risk situations which otherwise might not be identified;
- rapid deployment of resources to initiate or expand pollution prevention efforts in the private sector;
- timely and effective identification and development of safer substitutes and alternative chemicals, processes, and technologies;
- development of more complete data for public use; and
- identification of opportunities to avoid costly regulatory analyses or rulemakings by developing voluntary agreements, by delegating authority to state governments for situations in which high risk exposures are limited to a few sites or a single site, or by engaging other regulatory agencies such as OSHA, CPSC, and DOT to control risks that they are best able to address.

Table V-1. Benefits to Existing OPPT Programs of Chemical Processing and Use Information Collected under the Proposed IUR Amendments^a

Program	Chemical ID	Company ID	Industrial Processing and Use Information	End-Use Data	Exposure Data	Production Volume and Import Data
RM1 Process	✓✓	✓	✓	✓	✓✓	✓
Use Cluster Scoring System (UCSS)	✓✓	✓	✓	✓	✓✓	✓
Design for the Environment (DfE)	✓✓	✓	✓✓	✓✓	✓	✓✓
Master Testing List (MTL)	✓✓	✓	✓✓	✓✓	✓✓	✓
Screening Information Data Set (SIDS)	✓✓	✓✓	✓	✓	✓✓	✓✓
Existing Chemicals Review Program	✓✓	✓	✓	✓✓	✓✓	✓
Other Federal Risk Management Programs	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
State and Local Programs	✓	✓	✓	✓	✓	✓
Responsible Care	✓✓	✓✓	✓✓	✓	✓✓	✓

^a One check in the box signifies that the information is important, two checks indicate that the data are critical.

c. Illustrative Quantitative Assessment of Benefits From Processing and Use Data

The primary benefit of the new use and exposure-related information is derived from OPPT's ability to facilitate pre-screening activities for chemicals that may require intervention to mitigate risks. The information also benefits downstream risk screening and management activities under RM1 and other programs. The sections below provide a qualitative and quantitative assessment of how the proposed information collection would improve the efficiency and outcome of these programs.

i. More Rapid and Effective Pre-screening: Real Resource Savings

As described in Section b above, pre-screening of chemicals is an essential first step in determining priorities for more detailed risk screening and later risk management activities. The proposed rule will make the process by which chemicals enter EPA screening and management programs more effective and rapid. By eliminating from consideration chemicals that pose lesser risks, EPA can focus resources on chemicals posing higher risk. More effective pre-screening of chemicals will not only prioritize the chemicals entering screening and risk management programs, but will also better target the resources devoted to these activities, as described below.

Equally important, the information on uses and exposures will allow EPA to make determinations for some chemicals for which determinations currently are not possible. Because of the paucity of data, these chemicals are never identified for later risk screening or management activities, nor are they eliminated from consideration. These chemicals pose the greatest obstacle for EPA because no action is possible. By making available the use and exposure information proposed under the IUR amendments, OPPT can make pre-screening determinations for these chemicals and thereby identify potential risk concerns to human health and the environment.

The resources that could be saved by improving the pre-screening process and thereby reducing the number of chemicals entering the screening process can be roughly estimated by examining the TSCA Inventory and screening needs. The Inventory and Inventory Update processes provide production volume information for chemicals that is then used to screen chemicals for exposure risks. Based on these data, EPA has been able to determine that further information is not needed at this time for a large portion of the 75,000 chemicals on the TSCA Inventory. However, for about ten to fifteen percent of those chemicals, additional information is required to adequately assess the potential risks at a screening level. This proposed amendment will collect manufacturing level information on 8,900 of these chemicals and detailed use and exposure for approximately 6,000 of these 8,900 chemicals.

By allowing EPA to pre-screen these chemicals more effectively, the proposed IUR would reduce the number of chemicals entering screening processes (including RM1) and thereby reduce the resources required to screen and evaluate chemicals. Assuming, as per Box II-4 (See Chapter II), that these activities require 100 hours per chemical, reducing the number of chemicals that enter the screening process could result in savings of many FTEs, over time. For example, if, as a result of the

prescreening due to this new information, the number of chemicals entering RM1 is reduced from 6,000 to 3,000, savings of 300,000 hours or 144 FTEs would result. In addition, savings in extramural (contract) dollars and savings in industry costs (due to EPA not contacting industry to determine information on those 3,000 chemicals) would also be realized. The resources required to conduct both the pre-screening and the RM1 screening on a per chemical basis will fall as a result of the proposed rule, thus further conserving government resources. Even after the prescreening step, it is unlikely that these remaining 3,000 chemicals of significant risk would complete a screening in the near future, considering that the present rate of review is approximately 100 chemicals per year. It would take 30 years for 3,000 chemicals to enter and complete the RM1 process. The use and exposure information available under the proposed IUR amendments would accelerate this process. In the absence of the prescreening step, the original 6,000 chemicals would not receive a detailed evaluation within a feasible time period.

ii. More Rapid and Effective RM1 Screening: Time Savings

EPA established the TSCA Inventory and, subsequently, the Inventory Update process to collect production and facility information on chemical substances in support of EPA's efforts to satisfy TSCA requirements of protecting human health and the environment. The information collected through these programs is central to EPA's efforts to screen chemical substances to identify those that might pose unreasonable risks, ultimately supporting EPA's efforts to mitigate those risks using a variety of regulatory and non-regulatory mechanisms.

The time and effort required to collect and process data or to develop exposure estimates will also be reduced with the availability of information proposed to be collected under the IUR amendments. EPA will also be able to conserve resources and focus efforts on chemicals that potentially pose higher risks. Under the amendments, EPA will be prescreening reported chemicals with production levels above 25,000 pounds every four years. At each data collection, the top 100 chemicals with the greatest potential for risk can be subject to more indepth evaluation. Between data collections, EPA will examine, at minimum, the top 400 chemicals with potential for risk. The frequency of reporting cycles under the proposed amendments allows EPA to track changes in the usage of high priority chemicals. This approach offers advantages over a one-time data collection and certainly provides better information

than relying on previously collected chemical use data that may be outdated. The potential magnitude of the benefits of more rapid screening and risk reduction resulting from IUR reporting under the amendments can therefore be illustrated using the RM process as an example. Between 1990 and 1994, 1,924 chemicals were identified as candidates for the RM process and 561 chemicals proceeded through RM1--an average of 112 chemicals annually. It is reasonable to assume that a similar number of chemicals will be reviewed in future years if the IUR is not amended.

As in the case of pre-screening activities, there would be government resource savings associated with the facilitated and more rapid review of chemicals that do enter the process. Moreover, the additional use and exposure data would facilitate subsequent risk management activities as well, potentially allowing EPA to keep pace with the increased outflow from RM1 decisions. Consequently, throughout the pre-screening, screening, and risk management processes, EPA would be able to make better, more efficient use of public dollars in OPPT programs.

iii. More Rapid and Effective RM1 Screening: Potential Lives Saved

By speeding up the process by which chemicals are screened and evaluated through the risk reduction process, the additional use and exposure information could result in human and ecosystem risk reductions occurring years earlier, with concomitant reductions in mortality, morbidity, and ecosystem damages.

Based on the above discussion, it appears reasonable that, as a result of the proposed IUR reporting rule, risk management processes at EPA could result in real reductions in mortality, morbidity, and ecosystem damages because results would be available many years earlier than otherwise. Because the ultimate outcome of the chemicals to be evaluated or managed in EPA's screening and risk management programs in the future is unknown, it is difficult to translate the benefits--in terms of a more rapid process--into a quantitative estimate of lives saved, illnesses averted, or ecosystem damages avoided. Moreover, risk management activities result in both costs and benefits to society. Thus, in addition to improving the effectiveness and timeliness of screening, the downstream benefits of the proposed IUR are the ***net benefits*** of risk management activities that occur sooner than they would have occurred in the absence of the rule.

Ideally, the net benefits of the proposed rule would be assessed in several steps. The first step is to determine the likely outcomes of risk management activities that might be undertaken in the absence of the proposed rule, and the annual costs (in terms of industry actions) and benefits (in terms of lives saved and other environmental and health benefits, such as reduced morbidity) associated with these activities. This step would produce a measure of present value net benefits associated with risk management activities, in the absence of the proposed rule. The second step is to duplicate the present value net benefit calculation, but assume that risk management activities occur earlier under the proposed rule than they would occur in its absence. The third step is to calculate the incremental benefit of earlier risk management activities that occur under the proposed rule, i.e., the difference between present value net benefits calculated with and without the proposed rule. This incremental benefit results from the additional years of risk management activities that occur because the activities begin earlier. Finally, the net benefits of the proposed rule would be calculated by subtracting the present value of the costs of the rule from the incremental benefits of earlier risk management activities.

Data limitations, however, make this ideal approach difficult to implement. In particular, it is difficult to assess what the net benefits would be of any activities to address or mitigate risks subsequent to the screening activities. Although a number of existing chemical rules have been promulgated under TSCA or other authorities (e.g., EPCRA), and other programs such as DfE are ongoing, it is difficult to generate an estimate of net benefits, or even non-monetized reductions in morbidity and/or mortality, per chemical addressed. Furthermore, not all chemicals that enter the risk management process ultimately warrant actions to reduce risks. For both these reasons, it is difficult to quantify the net benefits that are likely to result from any risk management activities that could be accelerated by the proposed rule.

2. Benefits to Non-OPPT Risk Management Programs

In addition to OPPT, other public and private organizations are actively involved in managing chemical risks. These include other EPA programs, the Consumer Product Safety Commission (CPSC), the National Institute of Occupational Safety and Health (NIOSH), the Occupational Health and Safety Administration (OSHA), Department of Defense (DoD), state and local governments, and the private sector. Given the large number of chemicals and potential exposure scenarios at the industrial, occupational, and consumer level, these organizations also require more complete use and exposure information to effectively and efficiently manage chemical risks. Because of

CBI claims, not all of the information will be available to these other potential users. This is mitigated, in part, by proposals in the amendments to change CBI reporting such that the Agency expects a decrease in the number of CBI claims, thereby enabling EPA to provide a greater amount of the information to these various stakeholders. In addition, EPA will provide analyses of the amended IUR information and anticipates that other organizations will use the results. Through efforts made by these various stakeholders, the data to be collected under the proposed IUR amendments could reduce risks and costs to society in addition to the reductions gained by the programs conducted by OPPT.

a. Other Federal Risk Management Programs

Federal efforts other than OPPT's would benefit from new exposure information for IUR chemicals. For example, OSHA currently manages occupational exposure to chemicals by setting a variety of chemical and personal protection standards, by requiring preparation of emergency response and process safety management plans, and by requiring provision of health and safety data to workers for chemicals used in the workplace. OSHA would be able to use the amended IUR data to identify chemicals with large numbers of potentially exposed workers or with uses that suggest greater exposure potential. The amended IUR information could increase OSHA's ability to manage chemical hazards, exposures, and risks in occupational settings.

NIOSH would also benefit from the updated exposure-related information collected under the IUR amendments. Currently, the exposure information that NIOSH uses to determine occupational safety and health in businesses nationwide is primarily based on outdated information collected under the National Occupational Exposure Survey (NOES). Completed in 1983, NOES collected information such as plant site location, plant site SIC, information on the plant site's occupational safety and health programs, occupational titles of workers potentially exposed, the number of employees per occupational title, information on process steps, and trade names of products. Amended IUR data could be used by NIOSH in place of the NOES data to identify chemicals with large numbers of potentially exposed workers or with uses that suggest greater exposure potential.

CPSC also could directly use the proposed data in conducting its exposure and risk assessment activities -- screening consumer products for chemical hazards. The primary risk information used by CPSC to screen chemical hazards is information obtained from a network of hospital emergency rooms, and this is limited to injuries and illnesses resulting from acute exposures only. Information identifying

the chemicals used in consumer products is not readily available to CPSC at this time. The IUR amendments would provide a source of reliable information on the chemicals used in consumer products, enabling CPSC to identify the chemicals used in consumer products and, with consideration of hazard data, to identify chemical-consumer use situations presenting greater potential risk. The information could improve CPSC's ability to meet its program objective of protecting the public from chemical hazards in consumer products.

b. State and Local Programs

The proposed IUR amendments data would also help state and local authorities with rulemaking, information collection, and voluntary program activities. Because state and local governments must address chemicals, use patterns, and exposure scenarios that may be unique or isolated, state and local agency access to the enhanced data would assist in identifying situations that pose potentially high risks for individual states or locations within those states. The information added to the IUR includes county data, which would enable states to identify which counties are likely to have specific issues or which counties may have multiple chemical problems. The additional data also could be used to assist with setting goals, targeting actions, and developing or expanding pollution prevention activities. Several state environmental protection agencies, including those in Illinois, Georgia, California, and New Jersey, have expressed interest in having access to data collected by OPPT and to results of risk screening conducted by OPPT.

c. Non-Governmental Organization (NGO) Initiatives and Private Sector Stewardship

Many private sector organizations proactively reduce risks and provide leadership in preventing pollution while still maintaining productive economic enterprises. These organizations can improve their programs by developing a better understanding of how chemicals are used in general, thus encouraging more effective participation in community, regional, and national priority setting for chemicals. Activities typically undertaken by NGOs involve tracking industry trends, organizing grassroots involvement in risk-based decision making, and conducting outreach and educational programs. The proposed data could be used by these organizations to identify and establish priorities for risks, to evaluate chemicals and chemical use patterns to determine areas of concern, to

identify and promote pollution prevention opportunities, and to focus pollution prevention, public outreach, and education initiatives and activities.

Industry can use the amended IUR information to improve corporate product stewardship programs through access to use information reported by multiple companies. The Chemical Manufacturers Association's (CMA) Responsible Care Program is one example of a corporate product stewardship program that could use this information. Currently, the CMA cites "emission reductions as measured by TRI" and a growth in the number of Community Advisory Panels as strengths in its Responsible Care Program. Use information supplied through an amended IUR could be used to further strengthen this program. The Responsible Care Program requires companies to take responsibility for their products from cradle to grave, which requires an understanding of how their product is being used not only by their customers, but further down the chain. Despite this private effort, companies have told EPA that they don't know how their chemicals are used. Information provided by multiple companies could give an individual company a better understanding of the downstream uses of their product, therefore enabling more effective implementation of the Responsible Care concepts.

B. Benefits Due to Fewer CBI Claims

A second category of benefits attributable to the proposed IUR amendments stems from changes in the requirements for claiming information as CBI; these changes are expected to enhance the utility of the data and the public's access to that data. Three basic changes are proposed. First, EPA is proposing to add a requirement to provide up-front substantiation for facility identification, as well as the original requirement for up-front substantiation for chemical identity. EPA has found that CBI claims have been made for facility identification when that information has already been made public through the reporting requirements under EPCRA and other public documents.

Second, under the proposal, submitters could claim a non-CBI status for production volume information in ranges while continuing to claim specific production volume as CBI. This change is expected to reduce claims because although some submitters may continue to claim production volume information in ranges as CBI, it is expected that other submitters will not feel the need to claim this information as confidential. Third, a reassertion of previous CBI claims is proposed. The EPA believes that information that is four years old or more would typically have lost its proprietary value and would

not need to be maintained as CBI. This change provides a mechanism to ensure that older CBI claims would be reviewed by the submitter; companies would have to restate a claim or else confidentiality would lapse. EPA expects this change to decrease the amount of information that would have to remain under CBI protection.

The Agency expects these changes to reduce the number of CBI claims, increasing the amount of information available to the public. This has several benefits. The Agency's would be able to more publicly support its actions and decisions. Currently, support for Agency decisions is often CBI and cannot therefore be included in any publicly available support document. The public will be better informed and better able to provide comment on Agency actions. Second, the Agency will be able to provide the public with information to make its own decisions. These benefits were discussed in more detail in earlier sections of this chapter and center around the fact that increasing the amount of information available for the public allows for improved understanding of potential exposure and risk concerns.

C. Benefits of Changing Certain Exemptions

A third category of expected benefits of the IUR amendments relates to proposed changes to the exemptions under the original IUR. One major change is the elimination of the inorganic chemical exemption, which was originally developed based on EPA's belief that the hazard potential of many inorganic chemicals was relatively well-established and therefore production information was not needed. Recent findings with lead and other inorganic chemicals have brought EPA to the conclusion that hazard information alone is not enough to protect human health and the environment - use, exposure, and volume information for inorganic chemicals is also needed. Collecting information on inorganic chemicals through the proposed amended IUR would provide EPA with better knowledge of the chemicals being manufactured, what their production characteristics are, and the extent of potential exposures. As a result, the addition of this information on inorganic chemicals will enable the Agency to consider exposure to inorganic chemicals when evaluating risk potential. This information would improve OPPT's ability to conduct risk screens and develop management activities for those chemicals. EPA will be able to make decisions about this class of chemicals that heretofore have been difficult or, in some cases, not possible.

The Agency has considered an option of continuing the exemption for inorganic chemicals. This option, referred to as Option 11 in Chapter III, would limit EPA's ability to effectively screen risks for all potentially hazardous or risky inorganic chemicals. As discussed above, by eliminating the inorganic chemical exemption under the proposed option EPA will gain access to additional production volume and exposure-related data that could potentially aid in risk management and prescreening of inorganic chemicals. Option 11 would result in use and exposure information in approximately 12,155 reports on approximately 5,240 discrete chemicals, while the proposed option would result in approximately 15,400 reports for approximately 6,000 discrete chemicals.

The second major change in exemptions is the addition of a partial reporting exemption for petroleum stream chemicals. This exemption is being proposed because petroleum streams tend to be complex chemical mixtures with variable constituents. As such, these chemicals tend to be of low priority for EPA risk assessments. These factors have led the Agency to the decision that the collection of this information is not a priority at this time.

The Agency has also considered an option of exempting only site-limited petroleum streams from reporting under the IUR amendments. This option, referred to as Option 10 in Chapter III, would reduce the information EPA would be collecting by eliminating information for site-limited petroleum stream chemicals. The Agency settled on the broader proposed option, which exempts reporting of use and exposure information for multi-chemical petroleum process streams, as discussed in the previous paragraph. The proposed option would exempt about 140 more discrete chemicals from reporting use and exposure information than the site-limited petroleum stream exemption. The site-limited petroleum stream exemption would result in use and exposure information in approximately 19,800 reports on approximately 6,200 discrete chemicals, while the proposed option would result in approximately 15,400 reports for approximately 6,000 discrete chemicals.

D. Administrative and Related Benefits

The fourth category of benefits from the proposed IUR amendments stems from changes to several administrative requirements, each of which will facilitate data exchange and increase data comprehensiveness. Overall, the administrative changes would enhance the utility of the data by allowing linkages between various Agency databases. In addition, these changes would change the

reporting time frame to make IUR reporting more consistent within itself and with other EPA reporting requirements.

Specific benefits attributable to administrative changes under the IUR amendments flow from several sources. One of the proposed IUR amendments would require submission of EPA facility identity (EPA ID) numbers and the county in which the facility is located. These data would increase consistency with the identification systems of other EPA information collection efforts and is one step in the direction of “one-stop reporting,” an existing Agency initiative under development. Consistent facility identification information reported across the Agency would help to link data, providing both an important analysis tool and an important enforcement tool. State and other potential users of the data will also be able to examine the chemicals produced in a specific locality such as a county.

In addition, changing the reporting time frame from fiscal year to calendar year for all reporting sites would make the information collected more amenable to use as the information covers the same time frame. Another benefit to this comes from the improved ability to combine IUR information with information from other data sources using calendar reporting. For instance, a calendar year reporting cycle would correspond with the TRI reporting period, enhancing the Agency’s ability to develop linkages between the two databases. With all information provided covering the same time frame, more accurate assessments of the status of the industry would be possible. For those submitters already reporting information on a calendar year basis for other collections, this change may result in greater efficiency of company information collection and recordkeeping.

E. Benefits From Reporting Thresholds

From the perspective of benefits, the most significant elements of the proposed option are (1) the addition of exposure information to the reporting requirements and (2) the adjustment to reporting thresholds for facility and manufacturing information and for exposure and use information. The addition of exposure-related information has been discussed in Section A.1. Benefits resulting from the threshold options are discussed below. It should be noted that because the actual risk reductions that will occur as a result of this proposed rule have not been quantified, a qualitative argument is developed to illustrate the paths of risk reduction and the extent to which reduced mortality and morbidity might result.

There are two reporting thresholds proposed in these amendments -- a reporting threshold for facility and manufacturing information (e.g., facility location and information associated with producing

the chemical) and a reporting threshold for use and exposure data (e.g., numbers of exposed employees at use sites, number of use sites, percent of production volume). Reporting threshold options considered by EPA are presented in Table V-4. Of the options presented, Option 4 is the option proposed for the IUR amendments and sets the annual production threshold at 25,000 pounds for facility and manufacturing data and 100,000 pounds for use and exposure information. The original IUR requirements have a reporting threshold of 10,000 pounds. With the exception of the first option, all of the options increase the threshold for use and exposure information from this baseline threshold, while either maintaining the baseline or increasing to the proposed threshold level for the facility and manufacturing information.

The choice of threshold level is very important. The amount of information, and therefore the benefits, vary greatly depending upon the number of chemicals for which reports are submitted. The more reports, the more information EPA and others have for input into their decisions. However, there is a cost associated with the submission of this information. In considering the threshold levels, EPA balanced information needs and associated benefits with the cost of the information. EPA has determined that the threshold levels proposed provide the level of data necessary to provide EPA with the information necessary to screen the thousands of larger volume chemicals, develop risk management initiatives, and track changes in the marketplace (and therefore in exposure scenarios) while not unduly burdening industry.

To estimate changes in the amount of information provided under each of the reporting threshold options, historical IUR data regarding the number of report submissions was sorted by production volume. The remainder of this section discusses the effect that the proposed reporting thresholds and the other options considered would have on the benefits associated with use of the data collected through the proposed amended IUR.

1. Reporting Threshold Options for Facility and Manufacturing Information

As shown in Table V-4, the two reporting threshold options considered for submission of facility and manufacturing information are 10,000 and 25,000 pounds. The original reporting threshold requirement is 10,000 pounds; the IUR amendments propose to raise the reporting threshold to 25,000 pounds. This increase in the reporting threshold has been proposed to help reduce societal costs

resulting from the proposed IUR amendments, as discussed in Chapter III. Possible impacts on the generation of societal benefits posed by these two options are briefly discussed below.

Table V-2. Reporting Threshold Options for the Proposed IUR Amendments

Option #	Facility Identification and Manufacturing Information	Processing and Use Information
1	10,000 lb	10,000 lb
2	25,000 lb	25,000 lb
3	10,000 lb	100,000 lb
4	25,000 lb	100,000 lb
5	10,000 lb	500,000 lb
6	25,000 lb	500,000 lb
7	25,000 lb	1,000,000 lb
8	25,000 lb	10,000,000 lb
9	25,000 lb	500,000 lb/100,000 lb

a. 10,000 Pound Threshold for Facility and Manufacturing Data

This threshold option is equivalent to the original reporting threshold for submission of facility and manufacturing data. Taking into account the changes in exemptions included in the proposed IUR amendments (addition of inorganic chemicals), information on approximately 10,400 chemicals would be reported. Benefits associated with the addition of inorganic chemicals and with the addition of the new information requirements was discussed previously. As this threshold is the same as the baseline level, there are no changes to the benefits due to the level. However, this option does maximize the amount of useful facility and manufacturing information collected by EPA. In particular, data for chemicals with low production volumes would be more readily available for use in risk pre-screening and in conducting other activities, such as use and substitutes analyses. Without access to this level of facility and manufacturing data, data on production of chemicals with low production volumes would no longer be available to OPPT risk managers.

b. 25,000 Pound Threshold for Facility and Manufacturing Data

The reporting threshold for the facility and manufacturing data proposed in the IUR amendments is 25,000 pounds. It is estimated that by increasing the reporting threshold to 25,000 pounds, information on approximately 8,900 discrete chemicals would be collected. This is 15 percent fewer chemicals than those estimated to be reported for the 10,000 pound threshold under Option 1. With this change, benefits would decrease because EPA risk managers would no longer have access to current data on small volume chemicals (i.e., those produced between 10,000 and 25,000 pounds). This loss of data would potentially affect EPA's ability to undertake risk pre-screening activities, as well as the preparation of certain important analyses, including use, substitutes, and use cluster analyses. Without the data on these chemicals, information that would help to reduce exposure risks for chemicals may no longer be readily available to OPPT. It is expected, however, that reductions in societal benefits associated with a change from 10,000 pounds to 25,000 pounds for facility and manufacturing data would not be significant compared to those associated with changes in thresholds for use and exposure data, as described below.

EPA chose this threshold level in order to reduce the burden on submitters. EPA acknowledges that information on the lower volume chemicals would be useful and may find it necessary to collect this information in the future.

2. Reporting Threshold Options for Use and Exposure Information

EPA considered reporting thresholds for the submission of use and exposure data by ranging from 10,000 to 10,000,000 pounds, as presented in Table V-4. Because submission of use and exposure data is not required under the original IUR, all of the reporting threshold options considered would result in a more complete data set. However, each reporting threshold option considered during the development of amendments makes available to the OPPT significantly different levels of use and exposure data. Again, EPA balanced data needs and associated benefits with the cost of information submission. EPA determined that a threshold of 100,000 pounds best balances the needs of EPA, the public, and industry at this time. The overall extent and magnitude of the effects on societal benefits for each of the reporting options considered is discussed below.

a. 10,000 Pound Threshold for Use and Exposure Data

The lowest reporting threshold option considered for requiring submission of use and exposure information is 10,000 pounds. This option would serve to maximize the amount of use and exposure data collected. Use and exposure information on approximately 10,000 discrete chemicals would be reported. Greater benefits would be generated at this threshold than under the higher threshold options because there would be more comprehensive data on small volume chemicals. EPA historically has believed that, in general, a larger production volume indicates a more likely risk concern. However, the information on lower volume chemicals often provides data on substitutes for larger production chemicals. In addition, information on the lower volume chemicals is most unlikely to be publicly available; it is often the case that, for lower volume chemicals, little to no mention of them is made in the published literature. This situation limits EPA's ability to identify the lower volume chemicals and makes any analyses of those chemicals highly improbable. This lack of information also reduces the effectiveness of analyses of larger volume chemicals as the likelihood of substitute information could be either eliminated or greatly diminished.

b. 25,000 Pound Threshold for Use and Exposure Data

With the exception of Option 1, this option would result in the greatest number of submissions containing use and exposure information. It is estimated that this option would result in the collection of use and exposure information on approximately 8,500 discrete chemicals. As is the case for the 10,000 pound threshold described above, collection of valuable use and exposure data for low volume chemicals, albeit somewhat less than under the 10,000 pound threshold, would be possible under this production volume threshold. Benefits derived from this threshold, as compared to the proposed option, are similar to those discussed under the 10,000 pound option.

c. 100,000 Pound Threshold for Use and Exposure Data

This is the proposed option for the IUR amendments for reporting requirements for use and exposure information. This option will result in a level of submissions that will provide an effective level of coverage. EPA estimates that this option will result in the collection of use and exposure information on approximately 6,000 discrete chemicals.

EPA has determined that this is the optimum level of information. Collection of this level of data would provide valuable input to OPPT risk screening activities, streamlining EPA's efforts to correctly

identify chemicals needing further review and subsequently improving later risk management efforts. This level of coverage also allows EPA to track changes in chemical use over time, enabling EPA to react to the dynamic environment of the chemical industry.

d. 500,000, 1,000,000, and 10,000,000 Pound Reporting Threshold Options

The 500,000, 1,000,000, and 10,000,000 pound reporting threshold options would all significantly reduce the benefits resulting from use and exposure data for chemicals reported under the IUR. Compared to the 100,000 pound reporting threshold, these options would reduce the number of submissions containing use and exposure information by between 35 and 72 percent. Use and exposure information would be collected on fewer chemicals, ranging from a decrease of approximately 2,400 chemicals at the 500,000 pound threshold to a decrease of approximately 4,900 chemicals at the 10 million pound threshold. As the reporting threshold increases, the information available for EPA decision-makers would become increasingly limited and would generate proportionately fewer benefits. EPA's efforts to protect human health and the environment would be restricted to those chemicals with very large production volumes. Hence, under these higher threshold options, EPA's ability to effectively screen risks for a large number of potentially risky chemicals would be impeded by a lack of information.

F. Benefits From Reporting Cycle Options

The baseline reporting cycle is being retained for this proposal. Reporting currently is required every four years. EPA considered three alternatives to this cycle. The first alternative, referred to as Option 12 in Chapter III, would require all reportable chemicals to report facility and manufacturing information every two years and use and exposure information every four years. This would allow EPA to collect manufacturing information for chemicals that are produced periodically, and hence, may not be captured in a four year reporting cycle. EPA would also be collecting information that would more closely track the changing chemical industry. The second alternative, referred to as Option 13 in Chapter III, would require all information to be reported every two years. Past experience with reporting shows the dynamic nature of the chemical industry (about 30% of the chemicals reporting in 1990 were not reported in 1994), providing justification for collecting information on a more frequent basis. However, EPA also felt that the information would not be put to sufficient use to justify the additional

expense to industry to supply this information. The third alternative, Option 14, would require one-time reporting. While this option reduces costs significantly, it does not allow EPA to develop a stream of information over time to assess risks on an ongoing basis and it would quickly become out-of-date.

CHAPTER VI. COST BENEFIT ANALYSIS AND COST-EFFECTIVENESS COMPARISONS

Cost benefit analysis is performed for proposed rules in order to ensure that the social benefits of a regulation outweigh the costs imposed on the regulated community and EPA, and to select the proposed regulatory option that offers the highest cost-benefit reward. For the proposed IUR amendments, however, a quantitative cost benefit analysis is far from straightforward. This is because many of the benefits, as described in Chapter V of this report, have to do with information collection rather than the direct avoidance of harm.

As a result, EPA has used a cost-effectiveness criterion to compare options. This approach, described in more detail below, looks at the amount of data collected and its cost, without quantifying the benefit of each option. The new information proposed to be collected under the IUR amendments would assist the Agency in developing chemical screening priorities, streamlining regulatory efforts, and making informed risk assessment and management decisions. This information would improve EPA's understanding of potential exposures resulting from industrial chemical use, allow EPA to more accurately track chemical use and exposure, and permit EPA to more effectively target chemicals that pose the greatest hazard or risk. In the case of the IUR amendments, lowering the costs to society while maximizing and targeting the information collected leads to cost-effective regulation.

The value of the information alone cannot be determined, especially given that the exposure and use information has yet to be collected. Thus, in contrast to many RIAs, the benefits of this regulation cannot be directly expressed in terms of avoided harm or other conventional measures. Nevertheless, the incremental costs of the proposed IUR amendments are justified by the potential longer term savings for industry reporting and EPA administration, and the higher cost-benefit performance of future regulation.

In order to evaluate potential options for the IUR amendments, EPA has used a measure of cost-effectiveness rather than a cost benefit analysis. Cost-effectiveness is a measure of the efficiency of a regulatory option in achieving a level of benefits. It is generally calculated by dividing the costs of a

regulatory option by the benefits. For this analysis, therefore, cost-effectiveness is described in terms of the relative amount of IUR data collected and the cost of collecting those data.

The remainder of this section presents the proposed option, and then describes and discusses each of the other options compared to the proposed option. As discussed in Chapter 2, the regulatory options vary along several parameters. The most important parameters are the two chemical production thresholds, which determine when producers must report only facility and manufacturing data ("partial form") and when they must report use and exposure data ("full form").³⁶ Other parameters include the length of the reporting cycle, and additional exemptions from reporting for various classes of chemicals. Table VI-1 presents an analysis of the amount of information that will be collected and Table VI-2 presents the first year cost of each option relative to the proposed option.

³⁶ Some chemicals are partially exempt, in that manufacturers need only submit partial reports regardless of the production volume. This explains why Options 1 and 2, which have the same level for both thresholds, still have some partial reports being submitted.

Table VI-1. Comparison of Information Collected Under Each Regulatory Option

Option	Number of Reports					
	Partial Form	Percent of Proposed Option	Full Form	Percent of Proposed Option	Total	Percent of Proposed Option
Option 1	5,833	51	24,765	160	30,598	114
Option 2	5,733	50	21,078	136	26,811	100
Option 3	15,167	133	15,431	100	30,598	114
Option 4	11,380	100	15,431	100	26,811	100
Option 5	20,511	180	10,087	65	30,598	114
Option 6	16,724	147	10,087	65	26,811	100
Option 7	18,393	162	8,418	54	26,811	100
Option 8	22,435	197	4,376	28	26,811	100
Option 9	16,724	147	10,087	65	26,811	100
	11,380	100	15,431	100		
Option 10	5,763	51	19,814	128	25,577	95
Option 11	10,154	89	12,155	79	22,309	83
Option 12	11,380	100	15,431	100	26,811	100
Option 13	11,380	100	15,431	100	26,811	100
Option 14	11,380	100	15,431	100	26,811	100

The proposed option for the IUR amendments, Option 4, would require subject chemicals to be reported if they are produced in quantities greater than an annual production volume of 25,000 pounds. For those chemicals produced at a production volume greater than or equal to 25,000 pounds but less than 100,000 pounds, only the partial form (facility identification and manufacturing information) would be required. With the exception of partially exempt chemicals, for chemicals produced at a production volume greater than or equal to 100,000 pounds, the reporter would be required to submit the full form, providing use and exposure information in addition to the facility identification and manufacturing information. This option would result in the submission of 26,811 reports. Fifty-eight percent of the reports (15,431) would include both IUR and IUR amendment information. The incremental first year cost of the proposed option relative to the original IUR is expected to range from \$47.9 million to \$65.4 million.

Option 4 is among the most cost-effective options considered. That is, it has low incremental costs for the number of full and partial forms that would be submitted. Option 4 has two other advantages relative to other similarly cost-effective options. First, its lower threshold (i.e., the level at which a partial form is required) is 25,000 lbs and not 10,000 lbs. In the experience of EPA, for TSCA reporting and other programs, the data gathered for low production volume chemicals between roughly 10,000 and 25,000 pounds tends to be less valuable than that for larger production chemicals. This is because low production chemicals tend to have specialty applications that limit the amount of exposure. Second, Option 4 collects full information for chemicals in excess of 100,000 lbs of production.

Chemicals below

this level tend to be less of a priority for risk management, so a higher upper threshold can reduce the cost (relative to an upper threshold lower than 100,000) without losing much high-priority data for risk management purposes. In addition to being highly cost-effective, therefore, Option 4 is likely to yield important benefits that will make the IUR amendments more effective.

Option 1 would require full forms for all subject chemicals if they are produced over an annual production volume of 10,000 pounds. This option would result in the submission of 24,765 full reports, as well as 5,833 partial reports for the partially exempt chemicals. This yields a total of 30,598 reports (1.14 times as many as the proposed option) for an incremental first-year cost to society of between \$69.2 million and \$91.2 million, or between 39 and 44 percent more expensive than the proposed option.

This option is similarly cost-effective to Option 4. Although more expensive than the proposed option, it collects more data overall and considerably more exposure and use data (full forms) on small

Table VI-2. Comparison of Incremental First Year Industry Costs Under Each Regulatory Option

Options	Incremental First Year Industry Costs			
	Low		High	
	Incremental First Year Cost (\$M)	Percent of Proposed Option	Incremental First Year Cost (\$M)	Percent of Proposed Option
Option 1	\$69.2	144	\$91.2	139
Option 2	\$58.3	122	\$76.6	117
Option 3	\$52.1	109	\$72.7	111
Option 4	\$47.9	100	\$65.4	100
Option 5	\$42.3	88	\$62.0	95
Option 6	\$38.1	80	\$54.8	84
Option 7	\$35.1	73	\$51.4	78
Option 8	\$27.7	58	\$43.4	66
Option 9	\$38.1	80	\$54.8	84
Option 10	\$54.4	114	\$71.5	109
Option 11	\$36.8	77	\$50.4	77
Option 12	\$47.9	100	\$65.4	100
Option 13	\$47.9	100	\$65.4	100
Option 14	\$47.9	100	\$65.4	100

volume chemicals. Prior experience leads EPA to believe that full information for small volume chemicals is not as important as for large volume chemicals, making Option 1 less preferable to Option 4.

Option 2 is similar to Option 1, but with a higher threshold level. Full reports are required for subject chemicals if they are produced over an annual production volume of 25,000 pounds. Partial reports are also required for partially exempt chemicals. This option would require the submission of 26,811 reports, the same as for the recommended option, but with 36 percent more full reports providing exposure and use information. This increase in total data collected is offset by 17 to 22 percent higher costs; incremental first year costs for Option 2 are expected to range from about \$58.3 million to \$76.6 million. Option 4 is preferred over Option 2 because it focuses reporting on higher priority chemicals produced at levels over 100,000 pounds.

Option 3 would require subject chemicals to be reported if they are produced over an annual production volume of 10,000 pounds. For those chemicals produced at a production volume greater than or equal to 10,000 pounds but less than 100,000 pounds, only facility and manufacturing information would be required. For chemicals produced at a production volume greater than or equal to 100,000 pounds, the reporter would be required to provide use and exposure information, as well as facility and manufacturing information. This option would result in the submission of the same amount of use and exposure data, but would generate significant information on production of chemicals produced between 10,000 pounds and 25,000 pounds for an incremental cost of approximately \$52.1 million to \$72.7 million, only 9 to 11 percent higher than the proposed option. This option is less cost-effective than Option 4 and collects data for very low production chemicals that are not seen as a high priority.

Option 5 would require subject chemicals to be reported if they are produced over an annual production volume of 10,000 pounds. For those chemicals produced at a production volume greater than or equal to 10,000 pounds but less than 500,000 pounds, only facility and manufacturing information would be required. For chemicals produced at a production volume greater than or equal to 500,000 pounds, the reporter would be required to provide use and exposure information as well as facility and manufacturing information. This option would result in submission of 10,087 reports containing use and exposure information, or about 65 percent of the amount that would be collected under the proposed option. This option has an incremental cost of about \$42.3 million to \$62.0 million, or 88 percent to 95 percent of the proposed option. Although this option collects facility and manufacturing information on small volume chemicals (i.e., those produced between 10,000 lbs and 25,000 lbs.), it is less cost-effective than the proposed option because it reduces the amount of use and exposure information collected by about 35 percent while only reducing costs by about 5 to 12 percent.

Option 6 would require subject chemicals to be reported if they are produced over an annual production volume of 25,000 pounds. For those chemicals produced at a production volume greater than or equal to 25,000 pounds, but less than 500,000 pounds, only facility and manufacturing information would be required. For chemicals produced at a production volume greater than or equal to 500,000 pounds, the reporter would be required to provide use and exposure information, as well as facility and manufacturing information. This option is similar to Option 5 except that it would not require

facility and manufacturing information to be collected on chemicals produced in quantities less than 25,000 pounds. Although it is more cost-effective than Option 5 in that incremental first year costs are expected to be about 80 to 84 percent as much as the proposed option, it is less cost-effective than the proposed option. Approximately 65 percent of the use and exposure information would be collected under this option, compared to the proposed option.

Option 7 would require subject chemicals to be reported if they are produced over an annual production volume of 25,000 pounds. For those chemicals produced at a production volume greater than or equal to 25,000 pounds, but less than 1 million pounds, only facility and manufacturing information would be required. For chemicals produced at a production volume greater than or equal to 1 million pounds, the reporter would be required to provide both use and exposure information as well as facility and manufacturing information. In comparison to the proposal, this option collects about 54 percent of the use and exposure data at an incremental first year cost of about 73 to 78 percent of the proposed option. This option is less cost-effective and significantly reduces the amount of use and exposure information that would be collected on an important class of chemicals (i.e., those chemicals produced in volumes up to 1 million pounds). By not having access to data for these chemicals, the Agency's ability to perform screening assessments and other risk management activities would be seriously impaired.

Option 8 would require subject chemicals to be reported if they are produced over an annual production volume of 25,000 pounds. For those chemicals produced at a production volume greater than or equal to 25,000 pounds but less than 10 million pounds, only facility and manufacturing information would be required. For chemicals produced at a production volume greater than or equal to 10 million pounds, the reporter would be required to provide use and exposure information as well as facility and manufacturing information. This option collects only about 28 percent of the use and exposure data compared to the proposed option. The incremental first year cost of this option ranges from \$27.7 million to \$43.4 million, or about 58 to 66 percent of the costs of the proposed option. Because only chemicals produced at levels above 10 million pounds would have use and exposure data reported, this option provides only marginally useful data and is not considered cost-effective. The amount of data in the general literature on chemicals produced in volumes above 10 million pounds

tends to be greater than for small volume chemicals and the Agency would be able to discover much of the information for these large volume chemicals through other means. While the level of information would not be as comprehensive as that which would be collected under the IUR amendments, collecting this information for such a small subset of chemicals is not cost-effective.

Option 9 would require subject chemicals to report if they are produced over a threshold volume of 25,000 pounds. This option incorporates characteristics of Option 6 and the proposed option. In the first reporting period, only chemicals produced over a threshold volume of 500,000 pounds would be required to report use and exposure information. For the second reporting period, the reporting threshold for use and exposure information would be reduced to 100,000 pounds. This option would result in estimated incremental first year costs of between \$38.1 million and \$54.8 million, or 80 percent to 84 percent of the proposed option.

Option 10 would require the same threshold volumes and reporting cycles as the proposed option, but would provide different chemical reporting exemptions. Under this option, site-limited petroleum streams would be exempt from reporting any information and the petroleum stream exemption outlined in the proposed option would not apply. Option 10 would increase the incremental first year cost by approximately 9 to 14 percent compared to the proposed option and would collect 28 percent more exposure and use information than the proposed option. However, EPA feels the information on the petroleum stream chemicals would only be marginally useful at this time and concludes that collecting this information would not be cost-effective.

Option 11 would require the same threshold volumes and reporting cycles as the proposed option, but would provide different chemical reporting exemptions. Under this option, inorganic chemicals would be exempt from reporting any information. Option 11 would reduce the incremental first year cost by approximately 23 percent compared to the proposed option and would collect 21 percent less use and exposure information than the proposed option. However, EPA feels that information on inorganic chemicals would be extremely useful and concludes that collecting this information is cost-effective.

Options 12, 13, and 14 would require subject chemicals to be reported over the same threshold volumes as the proposed option, but over different reporting cycles. Option 12 would require that facility

and manufacturing information be collected every 2 years and use and exposure data every 4 years. Option 13 would require that all information be collected every two years. Option 14 would require one-time reporting of all information. These options do not impact first year costs or the amount of information that is collected relative the proposed option, but the more frequent reporting increases costs incurred in future years. Option 12 increases incremental net present value costs by about 46 to 58 percent, while Option 13 increases incremental net present value costs by about 92 percent to 96 percent. One-time reporting under Option 14 would reduce net present value and annualized costs significantly, to about 25 percent of the proposed option.

CHAPTER VII. SMALL ENTITY AND ENVIRONMENTAL JUSTICE IMPACT DETERMINATIONS

This chapter presents the estimated impacts of the IUR amendments on small entities and presents a discussion of environmental equity and justice concerns.

The Regulatory Flexibility Act of 1980 requires Federal Agencies to assess the effects of proposed regulations on small entities (P.L. 96-354). The Act requires agencies to evaluate all proposed rulemakings to determine if an Initial Regulatory Flexibility Analysis (IRFA) is necessary. If the regulation will result in significant impacts on a substantial number of small entities, the Agency must examine alternatives that may reduce adverse economic effects on significantly impacted entities. The Regulatory Flexibility Act was Amended by the Small Business Regulatory Enforcement Fairness Act of 1996. Section A of this chapter contains an examination of the effect of these proposed amendments on small entities, and Section B presents an analysis determining that an IRFA is not necessary.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that each Federal agency examine the effect of its regulations on minority and low-income populations, and address disproportionately high and adverse human health or environmental effects. Section C below contains an examination of the effect of these proposed amendments on minority and low-income populations.

A. Small Entity Analysis

The term “small entities” includes small businesses, small not-for-profit organizations, and small governmental jurisdictions, but since not-for-profit organizations and governmental jurisdictions will not be affected by this proposed rule, “small entity” in this analysis is synonymous with small business. For the proposed IUR amendments, small businesses are limited to small chemical manufactures and importers.³⁷ Section 605(b) of the Regulatory Flexibility Act requires the Agency to either certify that the regulatory action will not have a significant economic impact on a substantial number of small entities or

³⁷ Because the intent of the proposed amendments is to collect information from manufacturers and importers only, there would be no impact on small businesses that only process or distribute chemicals or products, but do not manufacture or import the chemicals.

prepare an Initial Regulatory Flexibility Analysis (IRFA). The basis for the determination that there is no significant economic impact is provided in the sections below.

1. Determination of the Number of Small Businesses

The following sections present (1) the definition of small businesses under the requirements of the original IUR and the proposed IUR amendments, (2) the definition of small businesses that is used for the purposes of this report, and (3) the methodology for determining the number of small businesses expected to report under the IUR amendments.

a. Definition of Small Business

The definition of small businesses under TSCA §8(a) includes those firms whose annual sales are less than or equal to \$40 million and produce less than 100,000 pounds of a regulated substance at a single manufacturing site (the original IUR exempts small businesses that manufacture less than 100,000 pounds of a chemical in a reporting year from all reporting; this exemption will remain unchanged under the proposed IUR amendments). Firms that generate \$4 million or less in annual sales are considered small businesses regardless of production volume (40 CFR 704.3). For purposes of this analysis, it is assumed that any firm with sales less than or equal to \$40 million is small, regardless of production volume.³⁸ This assumption may tend to overestimate the number of small businesses affected because it includes entities that may not meet all small business requirements under TSCA §8(a).

b. Number of Small Businesses

The expected number of small businesses reporting under the proposed IUR amendments was estimated according to the following methodology. First, the expected number of businesses producing organic chemicals that would be required to report was estimated based on information in the CUS Database for the 1994 reporting cycle. Second, the expected number of businesses producing inorganic chemicals that would be required to report was estimated. Because the CUS contains no data for inorganic chemicals, the number of businesses producing inorganic chemicals that are expected to report was estimated based on the relationship between the number of organic

³⁸ It is important to note that the \$40 million level is for parent company sales, not individual site sales.

chemicals and inorganic chemicals identified in the CICIS Database (1986) maintained by EPA.

Together, these two estimates represent the number of small businesses affected.

i. Organic Chemicals Businesses

To determine the number of small businesses producing organic chemicals that may be affected by the proposed rule, annual sales information was sought for the 758 companies that submitted production volume and company identification information for the IUR in 1994 (CUS Database 1996, CUS Database 1997). Of these companies, information on parent company annual sales was obtained for 627 companies from the Thomas Register (1990), Dun and Bradstreet (D&B 1996, D&B 1992), and Ward's Business Directory (1996). Annual sales data were unavailable for the remaining 131 companies.

There are several possible explanations for the unavailability of information for these remaining companies. First, these businesses may be too small to be listed in the directories that were consulted. Second, the IUR database may be out-of-date because it is based on TSCA reporting for 1994 (e.g., some companies may have gone out of business or changed hands since the information was reported). Finally, certain companies may have requested to be "delisted" or may have declined to provide information to the various directories.

Because the missing company information could not be obtained, these companies have been allocated to the small, medium, and large size categories according to two methodologies. In the first approach, each of the remaining 131 companies has been distributed according to the relative distribution established for the 627 companies for which data were available. The second approach placed all 131 companies in the small business category based on the assumption that these companies were too small to be listed. Table VII-1 presents company size information for the estimated 758 parent companies that submitted IUR information in 1994. The table identifies the proportion of small, medium, and large companies, as defined by annual sales, that are likely to be affected by the proposed rule. As the table indicates, a range of between 21 percent and 35 percent of the regulated community may be considered to be small (i.e., annual parent company sales less than or equal to \$40 million).

Table VII-1. Size of Manufacturing Companies Producing Organic Chemicals Based on Annual Sales Information

Company Size Based on Annual Sales ^a	Basis ^b		Method 1: Allocated by Proportions ^c		Method 2: Allocated as Small Businesses ^d	
	Companies		Companies		Companies	
	Number	Percent	Number	Percent	Number	Percent
Small (annual sales less than or equal to \$40 million)	132	21	159	21	264	35
Medium (annual sales greater than \$40 million and less than or equal to \$200 million)	133	21	159	21	133	18
Large (annual sales greater than \$200 million)	362	58	440	58	362	48
Total	627	100	758	100	758	100

^a Annual sales are for the parent company, when applicable.

^b The actual breakdown by size of the 627 companies that reported for the IUR in 1994 for which company sales data were available.

^c The estimated breakdown by size of all 758 companies that reported for the IUR in 1994 if the sizes of the 131 companies for which sales data were unavailable are assumed to be in the same proportion as the sizes of the companies for which sales data were available.

^d The estimated breakdown by size of all 758 companies that reported for the IUR in 1994 if all of the 131 companies for which sales data were unavailable are assumed to be small businesses.

Sources: Ward's Business Directory 1996, D&B 1996, D&B 1992, Thomas Register 1990, CUS Database 1996, CUS Database 1997.

ii. Inorganic Chemicals Businesses

EPA next accounted for businesses that will submit inorganic chemical reports under the IUR amendments. The number of these *businesses* was estimated indirectly based on the projected number of *reports* for organic chemicals and inorganic chemicals under the IUR amendments, as reported in Chapter III. EPA assumed that the ratio of the number of *businesses* reporting for inorganic chemicals to the number of *businesses* reporting for organic chemicals, based on the CUS Database, was the same as the ratio of the number of *reports* for inorganic chemicals (based on the CICIS Database) to the number of *reports* for organic chemicals. In other words:

$$\begin{aligned} \# \text{ Inorganic Businesses} &= (\# \text{ Inorganic Reports} / \# \text{ Organic Reports}) \times (\# \text{ Organic Businesses}) \\ \# \text{ Inorganic Businesses} &= (4,502 / 16,576) \times 758 \\ \text{Number of Inorganic Businesses} &= 206 \end{aligned}$$

Based on the analysis of sales information for small businesses producing organic chemicals, the number of inorganic businesses can be broken down into small, medium and large companies. Using the percentages derived through the proportional allocation method and presented in Table VII-1, the breakdown of inorganic businesses is calculated as 120 large companies, 43 medium companies and 43 small companies. Using the percentages derived through the second method, placing all companies for which information was unavailable into the small business category, the breakdown of inorganic businesses is calculated as 99 large companies, 37 medium companies, and 72 small companies.³⁹

iii. Total Number of Businesses

The total number of businesses submitting reports for organic and inorganic chemicals combined is estimated to be 964 businesses. Under the proportional allocation method, there are estimated to be 560 large, 202 medium, and 202 small businesses. Under the small business allocation method, there are estimated to be 461 large, 170 medium, and 336 small businesses. However, 964 may be an overestimate of the total number of businesses expected to report under the proposed IUR amendments because some businesses may submit a form for both organic chemicals and inorganic chemicals. These companies would tend to be double counted, once as an inorganic chemical business and once as an organic chemical business, according to the approach presented in this analysis.

B. Analysis of Economic Impacts

According to the 1997 EPA Interim Guidance for Implementing the Small Business Regulatory Enforcement Fairness Act and Related Provisions of the Regulatory Flexibility Act (U.S. EPA 1997b), the RFA does not define “significant economic impact on a substantial number” of small entities. The criteria recommended by the guidance for evaluating the impact on small businesses is the annualized compliance cost of the rule as a percentage of sales. If the cost is less than 1 percent for all affected small entities, regardless of the total number of small entities affected, then the rule is presumed not to have a significant economic impact on a substantial number of small entities.

³⁹ Please note that sums may not add due to rounding.

The RFA requires that EPA consider only the effects of the IUR amendments (i.e., the amendment to the existing rule). Throughout the development of the estimates, the following assumptions were used:

- each site produces an average of 8.4 reports (CUS Database 1997); and
- each small business has one site.

The assumption of one site per small business is supported by the results of the industry survey.⁴⁰ Small companies that were surveyed reported that an average of 1.2 sites manufacture a single IUR-reportable chemical. This chapter also presents a sensitivity analysis examining the impact on costs if more than one site per small business is assumed.

1. Determination of Individual Small Business Impact

a. IUR Amendments - Small Business Compliance for Partial Form

Completion of a partial form is required for chemicals with volumes of between 25,000 pounds and 100,000 pounds or for chemicals meeting one of the partial exemptions. Because small businesses are exempt from reporting chemicals with volumes under 100,000 pounds, only those meeting the partial exemptions with production volumes of 100,000 pounds or greater will be required to report. It is not known how many small businesses would complete the partial form, because the methodology for determining the total number of small businesses is based on data of previous reporting under the IUR. Data are therefore not available for those companies that are currently exempt. Because estimates of the number of small business completing only the partial form are unavailable, it is assumed that all will complete the full form. This assumption will tend to overestimate the total costs of compliance.

In the event that there are small businesses that would complete the partial form, estimates of the costs of compliance are presented. For organic chemicals, the average incremental cost of compliance with the amendments is estimated to be between \$5,780 and \$10,407. Dividing this cost by the average annual sales of \$16.5 million, the average burden to sales ratio is 0.04 percent to 0.06 percent for organic chemical small businesses filing the partial form. For small businesses manufacturing inorganic chemicals volumes between 25,000 and 100,000 pounds, the average

⁴⁰ The contents, administration, and results of the survey are described in detail in Appendix D.

incremental cost of compliance with the IUR amendments is estimated to be between \$9,489 and \$15,820 (note that the baseline costs for inorganic chemicals is zero). Dividing this cost by the average annual sales of \$16.5 million, the average burden to sales ratio for small businesses reporting to the IUR is approximately 0.06 percent to 0.10 percent for inorganic chemical small businesses filing the partial form.

b. IUR Amendments - Small Business Compliance for Full Form

Completion of a full form is required for chemicals produced at volumes of 100,000 pounds or greater and not meeting one of the partial exemptions. For analytical purposes, EPA has assumed that all of the small businesses fit into this category. The average incremental cost of compliance for completing the full form for organic chemicals is between \$21,169 and \$27,112. Dividing this cost by the average sales of \$16.5 million for small businesses, the average burden to sales ratio is approximately 0.13 percent to 0.16 percent. For inorganic chemicals manufactured at volumes above 100,000 pounds, the average incremental cost of compliance with the IUR amendments for an average small company was estimated to be between \$24,879 and \$32,526. Dividing this cost by the average sales figure of \$16.5 million, the average burden to sales ratio for small businesses reporting on inorganic chemicals to the IUR is approximately 0.15 percent to 0.20 percent.

It has been assumed for this analysis that there is, on average, one site per company for small businesses. As mentioned earlier in the chapter, this assumption is supported by the results of the industry survey, which indicated an average of 1.2 sites per small business. Even though the assumption of one site per small business may tend to marginally underestimate the number of sites per company, it is important to note that small businesses would have to average between 5 and 28 sites per company in order for a cost greater than 1 percent of annual sales to be incurred.

Additionally, the assumption of one site per small business is offset by another assumption that may tend to overestimate costs. Specifically, the estimated number of reports (8.4 reports) per site used in the analysis may be an overestimate of the expected number of reports per site for small businesses because smaller sites tend to produce fewer chemicals (ICF 1996).

The impact of the proposed IUR amendments on small businesses that produce inorganic chemicals only (as opposed to those that produce organic and inorganic chemicals or only organic chemicals) will be slightly higher than the incremental cost of the amendments for small businesses as a

whole, attributable to the fact that the baseline costs for inorganic chemicals are zero. These additional costs are small, however, and the increased burden as a percentage of sales is approximately one hundredth of a percent. Table VII-2 summarizes the effect of the IUR amendments on small businesses. As the table indicates, approximately 43 to 72 small businesses that produce only inorganic chemicals would be required to report under the proposed IUR amendments.

As presented in Table VII-2, the economic burden of the IUR amendments on small businesses does not exceed 1 percent of the annual sales for an average small business. In fact, small businesses producing organic chemicals and completing the full form would need to have annual sales of less than \$2.7 million (\$27,112 divided by one percent) to experience a significant economic impact. Small businesses producing inorganic chemicals and completing the full form would need to have annual sales of less than \$3.2 million (\$32,526 divided by one percent). Given the estimated mean annual sales of \$16.5 million for small businesses potentially reporting to the original IUR, the typical small business will not experience a significant economic impact from the proposed changes to the rule. Because the amendments will not significantly impact a substantial number of small entities, EPA has determined that an Initial Regulatory Flexibility Analysis (IRFA) is not necessary for the proposed IUR amendments.

Table VII-2. Effect of IUR Amendments on Small Businesses

Allocation Strategy	Facility, Manufacturing, Processing, and Use Information (Production volume greater than 100,000 pounds)			
	Organic Chemical Reporters		Inorganic Chemical Reporters	
	Number Affected	Percent of Sales	Number Affected	Percent of Sales
Allocated by Proportions	159	0.13 - 0.16	43	0.15 - 0.20
Allocated as Small Businesses	264	0.13 - 0.16	72	0.15 - 0.20

Notes: Impacts are overestimated because it is assumed that all small businesses would complete the full form. The incremental cost as a percentage of sales for completion of the partial form is lower than for the full form. These numbers are presented in the text above. Sums may not add due to rounding.

Sources: CICIS Database 1986, CUS Database 1996, CUS Database 1997, ICF 1996, Ward's Business Directory 1996, D&B 1996, D&B 1992, Thomas Register 1990.

2. Sensitivity Analysis

The analysis above assumes an average of one site per small business. As mentioned, this assumption is confirmed by the survey results indicating an average of 1.2 sites per small business. To determine the impact of varying the assumption of one site per small business, this section presents a sensitivity analysis assessing the effect on incremental costs of assuming *two* sites per small business.

Again, because only small businesses meeting the partial exemptions with production volumes of 100,000 pounds or greater will be required to report, it is assumed that all will complete the full form. In the event that there are small business that would complete the partial form, estimates of the costs of compliance are presented.

The cost of reporting under the IUR amendments assuming two sites per business is double the cost of reporting under the assumption of one site per business. However, as presented in Table VII-3, the economic burden on small businesses still does not exceed 1 percent of the annual sales for an average small business. Therefore, the results of this sensitivity analysis confirm that an Initial Regulatory Flexibility Analysis (IRFA) is not necessary for the proposed IUR amendments.

**Table VII-3. Effect of IUR Amendments on Small Businesses
Assuming Two Sites Per Small Business**

Allocation Strategy	Facility, Manufacturing, Processing, and Use Information (Production volume greater than 100,000 pounds)			
	Organic Chemical Reporters		Inorganic Chemical Reporters	
	Number Affected	Percent of Sales	Number Affected	Percent of Sales
Allocated by Proportions	159	0.26 - 0.33	43	0.30 - 0.39
Allocated as Small Businesses	264	0.26 - 0.33	72	0.30 - 0.39

C. Environmental Equity/Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires that all federal agencies address the issue of environmental justice by identifying and revising programs, policies, and activities that may disproportionately and adversely affect the health of minority or low income populations or their environments.

Because the proposed IUR amendments are an information collection exercise, there are no negative environmental equity issues associated with them. Instead, the information that would become available through the proposed rule would enable the Agency to target educational, regulatory, or enforcement activities towards industries or chemicals that pose the greatest risks and/or to target programs for geographic areas that are at the highest risk. Thus, the information proposed to be gathered under the IUR amendments would help EPA to make decisions that will benefit potentially-at-risk communities, some of which may be disadvantaged.

To illustrate the way in which information proposed to be collected under the IUR amendments would benefit minority and economically disadvantaged persons and communities, geographic areas with high site reporting⁴¹ have been compared with social and economic characteristics of the populations potentially affected by the proposed amendments. A significant portion of low income and minority communities are in proximity to IUR sites. Specifically, of the 121.2 million people who lived within 10 miles of an IUR site (49 percent of the 1990 U.S. population), almost 38 million (30 percent) were minorities. This number is greater than the nationwide figure of approximately 49 million (20 percent) minority individuals, out of the total 1990 U.S. population of 248.7 million. Roughly 24 million (20 percent) of the people living within 12 miles of an IUR site were at or below 150 percent of the poverty level. This is consistent with the census figure of 52.5 million (21 percent) individuals at or below 150 percent of the poverty level nationwide (U.S. Census 1990).

The information proposed to be collected through the IUR amendments would allow EPA to focus risk screening and assessment activities on chemicals with high exposure profiles and risks. Additionally, because the IUR amendments data would allow EPA to view chemical exposures and uses on a regional or local level, it is possible that analyses could be undertaken that would benefit disadvantaged groups. Specific activities to benefit these groups could include information dissemination, community awareness, exposure mitigation, pollution prevention, outreach and educational programs, and consumer protection programs. In addition, EPA may share aggregated information with non-governmental organizations (NGOs), private sector stewardship programs, other federal programs such as OSHA and CPSC, and other federal and state government agencies, resulting in worker or consumer oriented programs or local, state, and regional programs targeting disadvantaged groups.

Additionally, as discussed in Chapter V, the information that would be collected under the proposed IUR amendments would aid in targeting potential health and ecosystem risks. Minority and economically disadvantaged groups would benefit from these potential risk reductions even if programs specifically targeting disadvantaged persons do not exist. Because the production volume information currently available to EPA is not always sufficient for identifying chemical exposures and human risks,

⁴¹ High site reporting is defined as 100 or more reports from IUR submitting sites.

better compilation of use and exposure data would enable EPA to predict more accurately the magnitude and nature of ecosystem and human population exposure. This better information on uses and exposures would potentially benefit minority and economically disadvantaged groups by alerting them to the chemical exposure risks in their workplaces and communities.

Additionally, the availability of better information would also enable EPA to conserve resources and focus efforts on chemicals that pose higher risks, and thereby potentially more effectively and expeditiously reduce the risks posed by these chemicals. For example, worker exposure information would be used to develop priorities and to determine chemicals or uses that require a more detailed risk screening or assessment. The rapid identification of potentially high risk situations would also allow for a more timely and efficient identification and development of safer substitutes and alternative chemicals, processes, and technologies, thereby benefiting all potentially exposed employees (including disadvantaged ones) that work at chemical manufacturing, importing, and processing sites. Although programs and safety measures would not have been targeted to a specific subset of workers, disadvantaged persons employed at these sites would benefit from EPA's improved ability to target risks and thereby more efficiently implement the programs and safety measures necessary to reduce these risks.

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APPENDIX A.

**DRAFT REPORTING FORM
FOR THE
PROPOSED IUR AMENDMENTS**

APPENDIX B. CURRENT DATA COLLECTION

There are currently a number of chemical data sources maintained by EPA and other federal and state agencies, as well as publicly available databases, that contain limited information on production, processing, emissions, and other chemical data. However, these sources generally do not contain the type of chemical use and/or exposure data necessary for EPA to conduct more effective chemical risk screening. The more detailed collection of use and exposure information proposed under the IUR amendments would provide EPA with the means to better determine those chemicals with the greatest potential for risk, and thereby conduct more effective risk management activities. This appendix describes the information available in each of the currently available sources as compared to the data that is proposed to be collected under the IUR amendments. Additional information can be found in “*A Review of Existing Exposure-Related Data Sources and Approaches to Screening Chemicals: A Response to CMA*” (U.S. EPA 1998a).

1. Air Programs and Datasets

- The Office of Air Quality Planning and Standard (OAQPS) maintains the Aerometric Information Retrieval System (AIRS), a national repository for information on seven types of airborne pollution in the United States. The AIRS Facility Subsystem (AFS), one of the four AIRS components, is used to track point source emissions and compliance data from industries. Information collected includes plant compliance summaries, emissions by SIC-code, and the extent and distribution of emissions (U.S. EPA 1996a). This collection focuses on air emissions and does not contain information on specific chemical production volume, uses, or worker exposure scenarios.
- The Office of Air and Radiation (OAR) tracks chemical use, hazard, and risk information for approximately 150 chemicals that are replacements for ozone depleting substances (ODS). The

information is collected under the Significant New Alternatives Policy (SNAP) Program. This data set does not collect the detailed chemical exposure and use information called for by the IUR amendments.

2. Solid and Hazardous Waste Programs and Datasets

- The Office of Solid Waste and Emergency Response (OSWER) manages the Biennial Reporting System (BRS). The BRS data describes the aspects of, and monitors the trends in, hazardous waste generation, management, and minimization for RCRA large-quantity generators and for treatment, storage, and disposal facilities subject to RCRA permitting requirements. Although the data set contains information on the chemical constituents in hazardous waste from the paint, petroleum, and pesticides industries (U.S. EPA 1996a, McBride 1996), it does not contain information on specific chemical use, worker exposure scenarios, production volumes, or production locations.
- The Office of Emergency and Remedial Response (OERR) is responsible for compiling the Oil and Hazardous Material Technical Assistance Data System (OHMTADS), which contains information on hazardous substances including: chemical name, physical/chemical properties, lists of regulations covering production and use data, safety and toxicity data, and response information (U.S. EPA 1996a) for large volume industrial chemicals transported in bulk quantities. This data set does not contain the data proposed to be collected under the IUR amendments.
- The Office of Solid Waste (OSW) maintains the Resource Conservation and Recovery Information System (RCRIS), a national system supporting the Resource Conservation and Recovery Act (RCRA) program. This system tracks events and activities related to facilities that generate, transport, treat, store, or dispose of hazardous waste (U.S. EPA 1996a); however, the dataset does not collect detailed chemical use or exposure information at the level called for by

the IUR amendments. Additionally, RCRA reporting does not account for chemicals used within a facility that are not disposed of or treated as hazardous waste.

3. Water Programs and Datasets

- The Office of Ground Water and Drinking Water (OGWDW) maintains the Federal Reporting Data System (FRDS), a repository of information about Public Water Supplies (PWS) and their compliance with requirements of the Safe Drinking Water Act (SDWA) of 1986 (U.S. EPA 1996a). This database does not include chemical exposure, end use, manufacturer, or production information as would be required under the IUR amendments.
- The Office of Water (OW) compiles the Permit Compliance System (PCS), a computerized management information system containing data on National Pollutant Discharge Elimination System (NPDES) permit-holding facilities. Each permit record contains information that identifies permits, pollutant discharge limits, pollutants discharged in wastewater, and facility compliance schedules and violations. This database only contains industry-specific information about the amount and type of chemicals discharged from various manufacturing and service industries, not information on site-specific chemical production, worker exposure, or chemical end use (Rubin 1996, Strasler 1996, U.S. EPA 1996a).

4. Pollution Prevention and Toxic Substances Programs and Datasets

- The Office of Pollution Prevention and Toxics (OPPT) administers the Toxic Release Inventory (TRI), which contains site-specific information on the amounts of approximately 540 individually listed toxic chemicals and 22 categories of chemical compounds released directly to air, water, or land or transferred off-site. Because the database only collects information on chemical releases, it does not contain site-specific information on chemical production, use, or worker exposure (U.S. EPA 1996a).

- The Office of Pollution Prevention and Toxics (OPPT) maintains the Premanufacture Notification (PMN) database under the TSCA §5 New Chemicals Program. The database contains physical/chemical properties, use and predicted production information, worker exposure information, and process related information for “new” chemicals submitted for approval to begin commercialization. This data set provides information only on new chemicals and, therefore, has a negligible overlap with the data proposed to be collected under the IUR amendments.
- The Office of Pollution Prevention and Toxics (OPPT) developed a joint voluntary program in cooperation with CMA, SOCMA, CSMA, and API. The program, entitled the Use and Exposure Information Voluntary Project, allows EPA to collect chemical use, exposure, and release information for certain chemicals targeted under EPA’s Risk Management (RM) program. Information has been collected in three groups (two in 1994 and one in 1996) for 15-20 chemicals per group from a total of approximately 100 facilities. Because of the voluntary nature of the program and the limited number of chemicals examined, the data are not collected for most manufactured chemicals. Therefore, data generated from this project would have limited usefulness for initial risk screening activities. Rather, the data serves to inform the second step of risk characterization, after an initial risk screening. In other words, UEIP provides detailed information on a small number of chemicals for a select number of facilities, but it would be difficult to extrapolate from this data set to develop a nationwide picture of use and exposure.
- The Office of Pollution Prevention and Toxics (OPPT) requires that chemical manufacturers and importers report facility identification, manufacturing, use, and exposure information as part of the Primary Assessment Information Rule (PAIR). The type of information collected under the PAIR is similar to the type of information proposed to be collected under the IUR amendments. However, the PAIR information is collected for only a very small, select set of chemicals during each reporting period, and the chemicals that are targeted by PAIR change from year to year based on the priorities of the Interagency Testing Committee. Therefore, the information collected under the PAIR provides only a snapshot of the use and exposure of a small set of

chemicals each year rather than a periodically updated record of toxic chemical manufacture, exposure, and use.

5. Research and Development Programs and Datasets

- The Office of Health and Environmental Assessment (OHEA) maintains the Integrated Risk Information System (IRIS), a database that contains summaries of health risk and EPA regulatory information on more than 500 specific chemicals. The database is not linked to chemical use and does not provide site-specific characterizations of workplace exposure scenarios or production volumes.

6. State Agency Data Collection Efforts

- Massachusetts maintains a database of emission and process information (i.e., quantity produced, process and end product description, and certain chemical identification and property information) from manufacturers, users, and processors within Massachusetts only. This database is part of an effort to reduce toxic wastes in the state (Hope 1996). The information is collected under the Toxic Use Reduction Act (TURA); however, no exposure information regarding the number of potentially exposed workers or uses of the chemical (NAICS codes, consumer uses, etc) is collected under TURA (MADEP 1995).
- New Jersey collects production volume and end-use information under the NJ state Toxic Catastrophe Prevention Act (TCPA), supporting a risk management program for companies that manufacture, process, possess or use chemicals above certain chemical-specific threshold levels. The threshold levels are developed for each individual chemical covered under the program based on volatility and toxicity, and may range from as low as 100 pounds to greater than 100,000 pounds. The information collected is specific only to production and end-uses within the state of New Jersey. Although companies are required to report chemical information as part of the state's risk management program, chemicals shipped in or out of a site as product are not tracked. Information reported primarily relates to release scenarios (i.e., quantity of chemical released from the site into the air or water or as solid/hazardous waste). Additionally, no worker exposure data is collected under this program (Larmee 1996).

- Oregon gathers facility and chemical-specific data on the volume of toxic materials used or brought on-site as part of the Toxics Use Reduction and Hazardous Waste Reduction Act (TURHWRA) of 1989. The primary component of this law is that all facilities in Oregon that report under the Federal Community Right to Know TRI requirements or are hazardous waste generators must develop and submit facility plans to reduce toxic chemicals use and hazardous waste generation. TURHWRA does not contain information on the number of potentially exposed workers or provide detailed information on chemical production or use pathways. However, the requirements under TURHWRA do provide a snap shot of on-site use of toxic chemicals for key facilities in Oregon (Rozell and Brower 1993, OSPIRG 1993).

7. Other Federal Agencies and Data Collection

- The Emergency Response Notification System (ERNS) is maintained by the U.S. Department of Transportation and is used to store information on notifications of releases of oil and hazardous substances into the environment. ERNS combines data from the National Response Center's Database with data from the 10 EPA Regions (U.S. EPA 1996a). Release reports are available for (1) substances designated as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, (2) oil and petroleum products, as defined by the Clean Water Act of 1972 (CWA) and amended by the Oil Pollution Act of 1990, and (3) all other types of materials. Information that can be found in the ERNS database includes, but is not limited to the following: the material and quantity released, where and when the release occurred, the agency notified, and any information about property damage, injuries, and/or deaths which occurred due to the release. However, there are several limitations to these data. ERNS data are focused on information about releases and not on manufacturing and use of chemicals. Secondly, the data are subject to a certain degree of uncertainty because ERNS contains primarily initial accounts of release made when exact details are often unknown. Lastly, these data are usually not updated unless an EPA region is involved in the response action.

- The Occupational Safety and Health Administration (OSHA) maintains data on the safety and health of workers, including worker exposure to potentially hazardous chemicals used in the workplace. This data focuses primarily on site-specific/problematic worker exposures. The data does not contain information regarding the number of workers across an industry that may be exposed to toxic chemicals in the workplace and does not track chemical use information. Further, it does not track chemicals in every workplace where they may be used, and only focuses on those where problems may have occurred in the past.
- The U.S. Consumer Product Safety Commission (CPSC) collects information on the safety and potential product hazards of more than 15,000 types of consumer products used in and around the home. Generic safety information, such as product labeling and packaging requirements, is collected, but the CPSC does not maintain the type or level of information that would be required under the IUR amendments. It is not within CPSC's jurisdiction to develop information on production volume and actual concentration of a chemical that is contained within a product. Information on consumer use and potential exposure to chemicals, as collected under the IUR amendments, may be useful to CPSC.
- The Department of Energy (DOE) maintains data on natural gas exports and imports, including volume, price, and point of entry or exit of the natural gas. The information is collected and made available to the public quarterly. Data are not collected for natural gas after it moves beyond the importation site or for natural gas that is both produced and used within the United States. Additionally, data are not collected on types of use or exposures and covers only a small subset of the chemicals potentially subject to the IUR amendments reporting (Glynn 1996). DOE also maintains data on petroleum products at the state level using broad categories such as motor gasoline and residual fuel.
- United Nations Environment Programme (UNEP) maintains the International Register of Potentially Toxic Chemicals (IRPTC), a database of more than 8,000 chemical profiles covering subject areas ranging from hazard identification to risk assessment. Chemical and product type,

use, and production information are among the 17 categories of data entered into the register for each chemical profile. However, the data are international in focus and coverage is spotty. In addition, site-specific information is not included.

8. Publicly Available Databases

- Publicly available chemical data sources include chemical industry journals (e.g., *Chemical Engineering News* and the *Chemical Marketing Reporter*), chemical and business directories (e.g., the *Directory of Chemical Produces* and the *Thomas Register*), chemical reference documents (e.g., the *Kirk-Othmer Encyclopedia of Chemical Technology*, *SRI International's Chemical Economics Handbook*, the *Freedonia Market Research* database, and the *Frost & Sullivan Market Intelligence Database*), and publications from chemical trade associations (e.g., the Chemical Manufacturers Association, and the American Chemical Society). These sources may be somewhat useful for characterizing production volume, chemical function, and use category information once individual chemicals have been identified, but this information is often either too general to be used to determine production and use at the plant level or too specific to provide data on industry-wide chemical production. In addition, often the information in these databases is outdated. In general, these sources do not contain the type of worker and consumer exposure information that would be collected under the proposed IUR amendments. Publicly available databases are described in more detail in the EPA report entitled "*A Review of Existing Exposure-Related Data Sources and Approaches to Screening Chemicals: A Response to CMA*" (U.S. EPA 1998a).

APPENDIX C. DEVELOPMENT OF THE ESTIMATED NUMBERS OF EXPECTED SUBMISSIONS FOR THE ORIGINAL IUR AND IUR AMENDMENTS REPORTING

This appendix describes the process used to develop estimates of the number of reports that would be submitted if the proposed IUR amendments were adopted. The total number of reports was estimated for each proposed threshold based on data submitted in 1986, 1990, and 1994 under the original IUR reporting requirements.⁴² This appendix contains the following sections:

- Section A describes the input data and data sources that were used as a basis for the estimated number of reports and presents the methodology used to develop the estimates.
- Section B presents the estimated number of reports for each of the proposed options.

A. Input Data and Methodology

Data compiled from EPA's Chemical Update System (CUS)⁴³ and EPA's Chemicals in Commerce Information System (CICIS)⁴⁴ were used to determine the estimated number of reports expected under the proposed IUR amendments. The categories of input data refer to chemicals reported to the original IUR, and organic and inorganic chemicals reported under CICIS. When referring to the CICIS data, organic chemicals refers to all non-inorganic chemicals reported under CICIS.

The CUS database was used to determine the total number of reportable chemicals under the IUR, while the CICIS database was used to develop information on the relative number of inorganic chemicals in commerce as compared to the number of organic chemicals. This ratio was then used to estimate the number of reports for inorganic chemicals that would be submitted under the proposed IUR amendments.

⁴² Data maintained by EPA in the CUS database system.

⁴³ The CUS databases maintained by the Agency contain information collected under the IUR every 4 years. Three data collection cycles have been completed -- 1986, 1990, and 1994. The databases contain information on company and chemical identification, facility location, and annual production volume.

⁴⁴ The CICIS database maintained by the Agency contains information collected by the EPA on chemicals in commerce in the United States in 1977. The data includes company and chemical identification, facility location, manufactured or imported status, and production volume in ranges for both organic and inorganic chemicals. The TSCA Inventory of chemicals is updated twice a year based on information from the Master Inventory File, which is maintained by CAS. Chemicals are added periodically to the Master Inventory File through the New Chemicals Program.

1. Organic Chemicals and Multiple CAS Number Petroleum Stream Chemicals

Data from the CUS database were used to generate the estimates of expected reports for organic chemicals and petroleum stream chemicals. The data are based on the actual numbers of reports, by threshold cut-off, received during the 1994 reporting cycle. These input data include the number of individual reports, the number of discrete chemicals reported, the number of Form Us, and the number of reporting sites.⁴⁵ The values were derived for each of the various production volume thresholds to facilitate analysis of the threshold options proposed for the IUR amendments. The data are presented in Tables C-1 and C-2 below.

Table C-1. Organic Chemicals Reporting Data from EPA's CUS Database (1994)

Threshold (lbs)	Reports	Discrete Chemicals	Form U's	Sites
Total Reported	18,940	8,443	3,508	2,427
PV>25K	15,909	7,070	3,363	2,319
PV>100K	11,666	5,029	3,052	2,108
PV>500K	7,694	3,023	2,456	1,789
PV>1M	6,461	2,389	2,190	1,625
PV>10M	3,443	926	1,364	1,114

Source: CUS Database 1996, CUS Database 1997.

⁴⁵ The total number of sites that reported under the 1994 CUS reporting cycle was 2,981. Note that the number of sites for each reporting threshold as reported in Tables C-1 and C-2 also comes directly from the 1994 CUS. The number of sites values presented in the tables do not sum to 2,981 because individual sites produce multiple types of chemicals at various production volumes.

**Table C-2. Multiple CAS Number Petroleum Stream Chemicals
Reporting Data from EPA's CUS Database (1994)**

Threshold (lbs)	Reports	Discrete Chemicals	Form U's	Sites
Total Reported	6,118	451	1,554	1,167
PV>25K	5,964	447	1,524	1,146
PV>100K	5,828	441	1,476	1,116
PV>500K	5,642	434	1,422	1,069
PV>1M	5,542	426	1,398	1,048
PV>10M	4,952	391	1,225	904

Source: CUS Database 1996, CUS Database 1997.

2. Inorganic Chemicals

The number of inorganic chemicals likely to be reported under the IUR amendments was derived from the CICIS data presented in Table C-3. The CICIS data is based on data for organic and inorganic chemicals and is presented by the production volume categories used in the original data collection. Those reported production volume categories are different than those required to evaluate the various IUR amendments options. Therefore, it was necessary to manipulate the data to reflect the thresholds examined by the IUR amendments reporting options (e.g., greater than 10,000 lbs., greater than 25,000 lbs., greater than 100,000 lbs., etc.). To perform this manipulation, the ratio of inorganic chemicals to organic chemicals in the CICIS data for each reported threshold was applied to the projected numbers of chemicals and reports developed from the CUS 1994 data, generating numbers of reports and chemicals for inorganic chemicals corresponding to the IUR amendment threshold categories.

Table C-3. Reporting Data From EPA's CICIS Database (1986)

Threshold (lbs)	Inorganic Chemicals			Organic Chemicals		
	Reports	Discrete Chemicals	Sites	Reports	Discrete Chemicals	Sites
PV < 1K	6,338	2,595	811	52,799	32,520	2,433
PV 1K-10K	1,364	649	458	11,219	7,557	1,391
PV 10K-100K	1,614	651	660	11,586	7,352	1,709
PV 100-1M	2,103	621	985	8,568	4,933	2,073
PV 1M-10M	2,115	497	1,211	5,661	2,532	2,011
PV 10M-50M	1,539	283	987	3,624	1,069	1,477
PV 50M-100M	616	148	462	1,595	431	792
PV 100M-500M	1,292	150	758	3,421	436	1,008
PV 500M-1B	333	64	270	1,261	184	421
PV > 1B	408	52	239	1,589	169	370

Source: CICIS Database 1986.

B. Estimated Number of Reports in Future Reporting Cycles

Estimates of the number of reports expected under the IUR amendments in future years were generated based on CUS data from the three past reporting periods (i.e., 1986, 1990, and 1994). There was little variation in the number of reports over those three periods; EPA therefore assumed that the number of reports expected in any given future reporting period would remain constant. The average number of reports from the past three reporting periods is used in this analysis to calculate the expected costs for reporting under the proposed IUR amendments. The assumption of consistency in the number of reports may be conservative because, as illustrated in Table C-4, the number of reports has actually been on a slight downward trend.

**Table C-4. Number of Reports Submitted
Under the Original IUR in 1986, 1990, and 1994**

Reporting Year	Number of Reports
1986	26,250
1990	25,535
1994	25,058
Average	25,614

Source: CUS Database 1997.

The CICIS data were used to determine a ratio of the historical number of organic chemicals and the number of inorganic chemicals. This ratio, when applied to the information available through the CUS database, enabled EPA to estimate the expected number of inorganic chemicals that would be reported under the IUR amendments. First, the number of discrete inorganic chemicals was estimated as if these chemicals had been reported in 1994. This was accomplished by multiplying the ratio of inorganic to organic chemicals reported to the CICIS database in 1986 by the total number of chemicals reported to the CUS database in 1994 (See Equation 1). This estimate (i.e., the number of discrete inorganic chemicals in 1994) was then used to determine the number of *reports* for inorganic chemicals as if they had been reported in 1994, based on the ratio of inorganic reports to inorganic chemicals in the 1986 CICIS data (See Equation 2). The future number of inorganic chemical reports was then estimated by multiplying the estimate of 1994 inorganic chemical reports by the ratio of future chemical reports to 1994 chemical reports in the CUS database (See Equation 3). Based on this methodology, estimated numbers of discrete chemicals and reports for inorganic chemicals were developed, as presented in Table C-5.

**Equation 1: Determination of the Estimated Number of Discrete Inorganic
Chemicals as if Reported in 1994**

$$IC_1 = (IC_2 / OC_2) \times OC_1$$

Equation 2: Determination of the Estimated Number of Inorganic Chemical Reports as if Reported in 1994

$$RIC_1 = (RIC_2 / IC_2) \times IC_1$$

Equation 3: Determination of the Expected Number of Inorganic Reports (Future)

$$RIC_3 = RIC_1 \times (FTR) / (TR)$$

- IC_1 = Estimated Number of Discrete Inorganic Chemicals as if reported in 1994
- IC_2 = Discrete Inorganic Chemicals reported to the CICIS database
- IC_3 = Expected Number of Organic Chemicals (Future)
- OC_2 = Discrete Organic Chemicals reported to the CICIS database
- OC_1 = Total Number of Discrete Chemicals reported to the CUS (Organic and Multiple CAS Number Petroleum Stream Chemicals)
- RIC_1 = Estimated Number of Reports for Inorganic Chemicals as if reported in 1994
- RIC_2 = Reports for Inorganic Chemicals reported to the CICIS database
- RIC_3 = Expected Number of Reports for Inorganic Chemicals (Future)

Ratios⁴⁶: $(IC_2)/(OC_2)$ = CICIS Inorganic Chemicals/ Organic Chemicals = 0.144

$(RIC_2)/(IC_2)$ = CICIS Inorganic Reports/ Inorganic Chemicals = 4.063

$(FTR)/(TR)$ = CUS Future Total Reports/ CUS 1994 Total Reports = 1.022

⁴⁶ Ratios were calculated using data for production volumes greater than 10,000 pounds.

Table C-5. Estimated Number of Chemicals and Reports Expected for Inorganic Chemicals^a

Threshold (lbs)	Total Number of Discrete Chemicals Reported to the CUS in 1994	Inorganic Discrete Chemicals (Estimated as if reported in 1994)	Inorganic Reports (Estimated as if reported in 1994)	Estimated Inorganic Chemical Reports (Future)
PV>10K	8,809	1,270	5,160	5,275
PV>25K	7,518	1,084	4,404	4,502
PV>100K	5,471	789	3,205	3,276
PV>500K	3,458	499	2,026	2,071
PV>1M	2,816	406	1,649	1,686
PV>10M	1,318	190	772	789

^a Numbers may not calculate exactly because of rounding.

Source: CUS Database 1996, CUS Database 1997, CICIS Database 1986, U.S. EPA estimates.

1. Calculation of Total Expected Numbers of Reports Under Proposed IUR Amendments

The proposed IUR amendments would require reporting for both organic and inorganic chemicals, and would provide a partial exemption for certain chemicals (i.e., multiple petroleum stream chemicals) from reporting requirements. The following equation was used to calculate the total number of reports expected under the proposed IUR amendments for all types of subject chemicals:

Equation 3: Determination of the Total Expected Number of Reports

$$T = ROC_1 + RIC_1 + RPS_1$$

T = Total expected number of reports
 ROC_1 = Reports for organic chemicals
 RIC_1 = Reports for inorganic chemicals
 RPS_1 = Reports for petroleum stream chemicals

2. Total Expected Numbers of Reports in the Future

As described above, the numbers of reports submitted under the IUR has remained relatively constant over time. Based on this observation, it has been assumed that future reporting will

also remain constant (i.e., the numbers of submissions expected in each future reporting period will remain constant). Hence, the average of 25,614 reports is used as the basis for calculating future costs. Table C-6 presents estimates of the number of expected reports for each proposed reporting threshold. In the event that this assumption is not completely accurate, an analysis of the effect of a ten percent increase or decrease in the number of expected submissions is presented in Tables C-7a and C-7b.

Table C-6. Estimated Numbers of Reports for the IUR Amendments

Threshold (lbs)	Organic Chemical Reports	Inorganic Chemical Reports	Petroleum Stream Reports	Total Reports	Total Reports Containing Processing and Use Info
PV>10K	19,490	5,275	5,833	30,598	24,765
PV>25K	16,576	4,502	5,733	26,811	21,078
PV>100K	12,155	3,276	5,602	21,033	15,431
PV>500K	8,016	2,071	5,423	15,510	10,087
PV>1M	6,732	1,686	5,327	13,745	8,418
PV>10M	3,587	789	4,760	9,136	4,376

Note: The numbers in this table illustrate the estimated number of reports for various threshold levels, but do not represent the number of reports expected under the proposed option.

Source: CICIS Database 1986, CUS Database 1996, CUS Database 1997, U.S. EPA estimates.

Table C-7a. Sensitivity Analysis Around the Estimated Total Numbers of Reports

Threshold (lbs)	Total Reports	Total Reports (+10%)	Total Reports (-10%)
PV>10K	30,598	33,657	27,537
PV>25K	26,811	29,491	24,129
PV>100K	21,033	23,136	18,930
PV>500K	15,510	17,061	13,959
PV>1M	13,745	15,120	12,371
PV>10M	9,136	10,050	8,222

Source: CICIS Database 1986, CUS Database 1996, CUS Database 1997, U.S. EPA estimates.

Table C-7b. Sensitivity Analysis Around the Estimated Numbers of Reports Containing Processing and Use Information

Threshold (lbs)	Total Reports	Total Reports (+10%)	Total Reports (-10%)
PV>10K	24,765	27,242	22,289
PV>25K	21,078	23,186	18,970
PV>100K	15,431	16,974	13,888
PV>500K	10,087	11,096	9,078
PV>1M	8,418	9,260	7,576
PV>10M	4,376	4,814	3,938

Source: CICIS Database 1986, CUS Database 1996, CUS Database 1997, U.S. EPA estimates.

APPENDIX D. INDUSTRY SURVEY RESULTS

During the spring/summer of 1996, the Agency conducted a survey (under Office of Management and Budget clearance #2070-0034) to assess the potential burden associated with reporting for the proposed Inventory Update Rule (IUR) amendments under TSCA §8.⁴⁷ The survey was distributed to previous IUR reporters selected from the CUS database.⁴⁸

The survey was designed to collect information regarding the amount of labor required to complete each task identified in the proposed IUR amendments. Survey respondents were asked to estimate the burden associated with collecting various data for each of three labor categories: clerical, technical, and managerial. The results of this survey provide the basis for determining the burden associated with the proposed IUR amendments. All analysis presented in this appendix focuses on the burden associated with completing the full reporting form. The analysis in Chapter III of this report further disaggregates the data to estimate the burden associated with reports covering only part of the reporting form (i.e., facility identification and manufacturing information). The remainder of this appendix presents an overview of the results of the survey and is organized as follows:

- Section A provides an introduction including a description of the survey, the draft reporting form, and a discussion of the survey respondents;
- Section B presents a discussion of the estimates of industry reporting burden per chemical, including the calculation of the mean total industry reporting burden, and the total reporting burden for large, medium, and small companies; and
- Section C presents average reporting parameters for the survey participants, including the number of sites per company producing a reportable chemical, number of processing and use sites, and the number of end uses.

A. Introduction

The survey was administered to 81 companies over a period of four months, from March through June 1996. The survey was sent to potential respondents along with a copy of the draft reporting form and instructions. Potential respondents were informed that participation was voluntary. Attachment

⁴⁷ The survey was conducted for EPA by ICF Incorporated, an EPA contractor supporting TSCA initiatives. This work was performed under EPA Contract No. 68-02-0064.

⁴⁸ EPA maintains the Chemical Update System (CUS) Database to track IUR information.

1 provides a copy of the survey and the introduction letter that were sent to potential participants, and Attachment 2 contains a copy of the draft reporting form sent with the survey.⁴⁹ Participants were asked to estimate the amount of time that would be required to report distinct pieces of information about the manufacture and use of TSCA Inventory chemicals.

The following three sections describe the industry burden survey, the draft reporting form, and the make-up of the survey respondents.

1. Survey Description

The survey was developed based on a draft reporting form incorporating the proposed IUR amendments as well as the original reporting requirements. Generally, the survey was structured so that each question corresponded to a data element on the reporting form. Most of the questions requested estimates of the amount of time that the reporting company would need to compile specific information concerning a typical chemical produced at their site, dividing the time among clerical, technical, and managerial staff. Additional questions asked for information about the number of reportable chemicals produced at a given site and the number of sites producing a reportable chemical, as well as the number of processing and use sites and the number of end uses of a typical chemical. These ancillary questions were designed to develop a better understanding of the reporting parameters and to assist in properly interpreting the results of the reporting burden questions.

In addition to providing answers for each survey question, participants were encouraged to provide comments regarding the survey, the reporting form, and the processes that would be used by the company to complete the reporting form. These comments were considered by the Agency during the development of the proposed IUR amendments and in redesigning the reporting form.

2. Draft Reporting Form Description

The survey was developed from a preliminary version of the revised Form U (i.e., the IUR amendments reporting form) covering both the original IUR reporting requirements and the proposed changes associated with the IUR amendments. The draft reporting form used in this survey is different from the form included with the proposal; however, the data elements are similar. The draft form used in the survey was divided into five parts, as follows:

⁴⁹ Appendix A contains a copy of the revised draft reporting form.

- Part 1. Facility Identification Information
- Part 2. Chemical Specific Information
- Part 3. Information on Chemical Processing - Incorporative Activities
- Part 4. Information on Chemical Use - Non-Incorporative Activities
- Part 5. Known Commercial and Consumer End Uses of Chemical

Generally, the information included in Parts 1 and 2 of the reporting form corresponds to the information collected under the original IUR, supported by the addition of three data elements regarding company information, plant site identification, and manufacturing information. Parts 3 through 5 of the proposed reporting form include the chemical use and exposure information that constitutes the majority of new requirements under the proposed IUR amendments.

The original IUR requires that certain basic production and manufacturer identification information be provided. The specific data required are as follows:

- Certification including a signature, date, and name and title of the representative responsible for the accuracy of the information provided;
- Company Information including technical contact name, company name, company street address, and telephone number;
- Plant Site Identification including plant site name, Dun & Bradstreet Number, and plant site street address;
- Chemical Specific Information including chemical identity CBI substantiation, CAS Number or other identifying number, ID code, chemical name, site-limited status, activity (manufacturing or import), and production volume; and
- Confidential Business Information including up-front substantiation of CBI claims for chemical identity information and substantiation of CBI claims in the event of a Freedom of Information Act (FOIA) request.

In addition to the information required for the original IUR, the proposed IUR amendments require information on worker exposure and use, as well as limited new information relating to plant site identification. The information proposed to be collected under the IUR amendments is as follows:

- Company Information adding the company Dun & Bradstreet Number and mailing address;
- Plant Site Identification adding the county location of the plant site and the plant site mailing address, EPA Identification Number, and provision of CBI substantiation;
- Manufacturing Information adding the confidentiality status of the production volume range, number of workers potentially exposed during manufacturing, the physical state of the chemical, and the maximum concentration of the chemical when manufactured;
- Industrial Processing and Use Exposure Related Information adding information regarding processing and use of the chemical, including process or use codes, 5-digit

NAICS codes, industrial function categories, percent production volume, site-limited status, number of sites (in ranges), and number of potentially exposed workers (in ranges);

- Consumer and Commercial End Use Exposure Related Information adding commercial/consumer end use categories, percent production volume, and maximum concentration (in ranges) of the chemical in the commercial/consumer end use; and
- Confidential Business Information adding up-front substantiation of CBI plant site identification claims and reassertion of CBI claims made in the previous reporting period, which includes completion of the check boxes in Section IV of the Form U and may also include additional paperwork to explain the reassertion.

3. Discussion of Survey Respondents

Potential participants in the survey were identified through the EPA's Chemical Update System (CUS) Database, which contains data collected under the original IUR. Companies were then grouped by size using information from Dun & Bradstreet's Duns Market Identifiers online service. A stratified random sampling method was employed to ensure that a representative cross section of the chemical manufacturing industry was surveyed. The stratification of the chemical manufacturing industry into small, medium, and large manufacturers was based on the annual sales of the parent company.⁵⁰ A total of 207 companies were sent a copy of the survey with a cover letter requesting that they participate in the survey. An attempt was made to contact each company by telephone to confirm the contact information and coordinate a telephone appointment to administer the survey instrument.

Of the companies contacted, 81 chose to participate in the survey. Three of these companies' responses are not included in the burden estimates because their results indicated a burden more than 19 times greater than the average burden estimated by all other survey respondents (See Section B.2 of this appendix for further discussion). The 78 remaining survey respondents included 20 small, 17 medium, and 41 large companies, 25.6 percent, 21.8 percent, and 52.6 percent, respectively. The distribution of small, medium, and large companies that report to the IUR, based on the CUS 94 Database, compares favorably to the distribution of companies that participated in the survey. Based on the CUS 94 database, the distribution of companies reporting to the IUR in 1994 was approximately 21

⁵⁰ Small companies were identified as having annual sales less than or equal to \$40 million, medium-sized companies have annual sales greater than \$40 million and less than or equal to \$200 million, and large companies have annual sales greater than \$200 million.

percent small companies, 21 percent medium companies, and 58 percent large companies (see Table VII-1 in the main body of this report for more information). Table D-1 presents a comparison of these results.

**Table D-1. Distribution of Survey Participants and IUR Reporters
By Company Size**

	Company Size (Percent)			
	Small	Medium	Large	Total
Survey Participants	25.6	21.8	52.6	100
IUR Reporters	21.1	21.2	57.7	100

Of the remaining 126 companies that were sent the survey, but did not participate, 20 declined to participate, 5 determined that the survey was not applicable to their business, and 32 could not be contacted because of incomplete or out-of-date contact information. The remaining 69 companies either did not acknowledge phone calls or did not find a convenient appointment time to complete the survey. For the most part, individual survey results were compiled over the telephone so that definitions could be explained in a consistent manner to all participants and unique interpretations of the survey questions could be avoided. Several survey participants chose not to review the survey over the telephone and mailed a completed survey to either the Agency⁵¹ or to ICF Incorporated (the Agency's contractor for this work). Responses from these companies were included in the data set.

Following completion of the interview process, the survey responses were entered into a Paradox[®] database maintained by ICF Incorporated. Queries of the data were prepared and executed to determine average reporting burden estimates and average reporting parameters for the survey participants.

B. Reporting Burden Survey Results

This section presents the reporting burden results of the survey. Reporting burden results are the answers to those questions directly relating to the amount of effort required to complete Form U for a

⁵¹ Surveys sent to the Agency were identified as such and transferred directly to ICF.

typical chemical. Results are presented in four ways - for all reporters, for small company reporters, for medium company reporters, and for large company reporters.

In general, the breakdown of small, medium, and large companies in the set of survey participants accurately reflects the actual breakdown of reporters under the original IUR in the chemical manufacturing industry as a whole. The following sections discuss the methodology for estimating the average industry burden associated with the proposed IUR amendments, the distribution of small, medium, and large companies within the set of survey participants and within the set of reporters under the original IUR, and a comparison of the average estimated reporting burdens for small, medium and large companies.

1. Methodology for Calculation of the Reporting Burdens

The survey results were compiled and reporting burdens calculated separately for small, medium, and large firms to determine the effect that company size may have on (1) the level of effort required to develop IUR amendment data and (2) the average numbers of sites, chemicals, and reports per company.

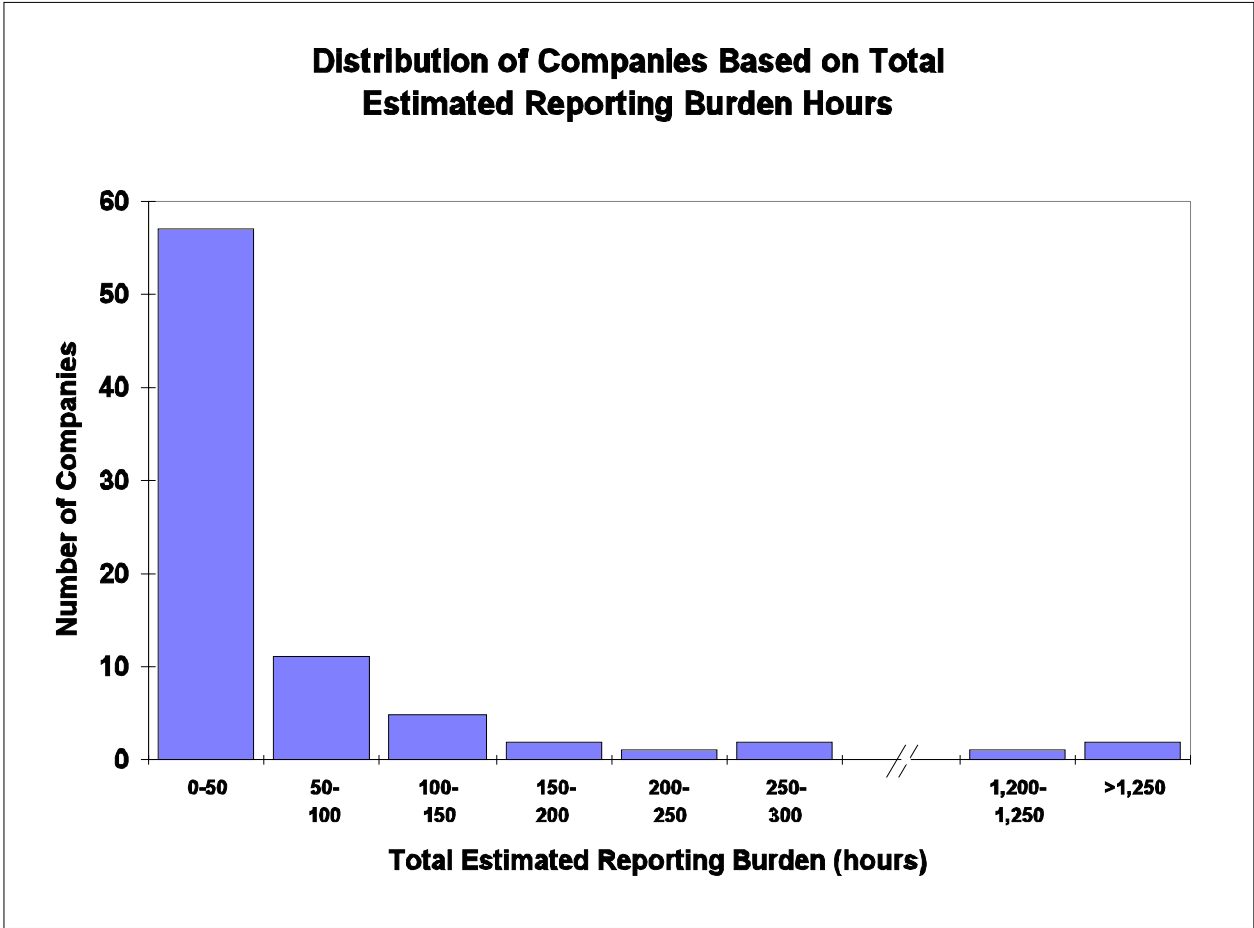
High and low burden estimates for each survey data element were provided by respondents. The high estimates were used to develop an average high estimate for each data element. The same methodology was used to develop an average low estimate for each data element. Each average high estimate was then weighted to reflect the correct distribution of small, medium, and large companies (according to the CUS database). The same was done for each average low estimates. Weighted average high burden estimates for each data element were then added together to yield a high total burden estimate for completing the entire form. Similarly, weighted average low burden estimates were then added together to yield a low total burden estimate.

2. Overall Burden Results

This section summarizes the overall burden results, as developed from survey responses. Survey results indicate that 70 percent of the companies reported a total per chemical reporting burden of between 0 and 50 hours. Of the remaining 30 percent of companies, 46 percent reported an average per chemical reporting burden of between 50 and 100 hours, 29 percent reported an average burden of between 100 to 200 hours, and 13 percent reported an average burden of between

200 and 300 hours. As mentioned above, burden estimates provided by three survey respondents were not included in the calculation of reporting burden estimates because their responses deviated statistically from the mean. As shown in Exhibit D-1, these 3 companies reported average per chemical burdens of over 1,000 hours, more than 19 times greater than the average burden for the other 81 responses. The following three sections describe the burden results for small, medium, and large companies. Section 6 presents a comparison of burden results based on company size.

Exhibit D-1. Distribution of Companies Based on Total Estimated Reporting Burden Hours



3. Small Company Burden Results

The average reporting burden for small companies under the proposed amendments was 22.8 to 27.0 hours per report. On average, small companies estimated 1.9 to 2.4 hours of clerical time, 15.6 to 17.3 hours of technical time, and 5.3 to 7.3 hours of managerial time for each report. Burden results for individual data elements, as estimated by small companies, are shown in Table D-2.

4. Medium Company Burden Results

The average reporting burden for medium companies under the proposed amendments was 53.0 to 58.4 hours per report. On average, medium companies estimated 7.9 to 8.8 hours of clerical time, 32.2 to 34.2 hours of technical time, and 12.8 to 15.4 hours of managerial time for each report. Burden results for individual data elements, as estimated by medium companies, are shown in Table D-3.

5. Large Company Burden Results

The average reporting burden for large companies under the proposed amendments was 51.3 to 70.6 hours per report. On average, large companies estimated 6.3 to 7.8 hours of clerical time, 32.8 to 43.1 hours of technical time, and 12.2 to 19.8 hours of managerial time for each report. Burden results for individual data elements, as estimated by large companies, are shown in Table D-4.

Table D-2. Small Company Reporting Burden for Sections of Form U

Task	Clerical Hours	Technical Hours	Managerial Hours
I. Facility Identification Information	0.04 - 0.04	0.79 - 0.79	1.25 - 1.25
1. Certification	0.02 - 0.02	0.72 - 0.72	1.22 - 1.22
2. Company Information			
Company Name, Contact, Address	0.01 - 0.01	0.04 - 0.04	0.01 - 0.01
D & B Number, Mailing Address			
3. Plant Site Identification	0.01 - 0.01	0.03 - 0.03	0.01 - 0.01
Plant Name, D & B Number, Address			
EPA ID Number, Mailing Address			
II. Manufacturing Information	0.52 - 0.52	3.79 - 3.95	0.63 - 0.66
1. Chemical Identification	0.30 - 0.30	1.83 - 1.86	0.16 - 0.16
2. Site Limited			
3. Activity			
4. Production Volume (lbs)			
5. Chemical Identification Up-front CBI Substantiation	0.05 - 0.05	0.53 - 0.58	0.18 - 0.18
6. Plant Site Up-front CBI Substantiation	0.05 - 0.05	0.36 - 0.41	0.07 - 0.07
7. Production Volume Range CBI	0.06 - 0.06	0.32 - 0.32	0.11 - 0.14
8. Total Number of Workers	0.06 - 0.06	0.40 - 0.40	0.07 - 0.07
9. Physical State	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
10. Maximum Concentration	0.00 - 0.00	0.35 - 0.38	0.04 - 0.04
III. Processing and Use Information	0.87 - 0.87	10.06 - 10.52	1.40 - 1.40
A. Industrial Processing and Use Exposure Related Data	0.66 - 0.66	7.23 - 7.63	0.73 - 0.73
1. Determination of Applicability	0.11 - 0.11	0.80 - 0.81	0.14 - 0.14
2. Process and Use Code	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
3. 5-Digit NAICS Code	0.06 - 0.06	0.46 - 0.47	0.03 - 0.03
4. Function Code	0.16 - 0.16	0.80 - 0.85	0.13 - 0.13
5. Percent Production Volume	0.26 - 0.26	1.64 - 1.75	0.15 - 0.15
6. Total Number of Processing and Use Sites	0.06 - 0.06	0.95 - 1.01	0.07 - 0.07
7. Total Number of Potentially Exposed Workers	0.01 - 0.01	2.59 - 2.75	0.21 - 0.21
B. Commercial and Consumer End Use Exposure Related Data	0.21 - 0.21	2.82 - 2.89	0.67 - 0.67
1. Determination of Applicability	0.00 - 0.00	0.44 - 0.44	0.06 - 0.06
2. Identification of End Use	0.10 - 0.10	0.66 - 0.66	0.22 - 0.22
3. Percent Production Volume	0.05 - 0.05	0.63 - 0.65	0.13 - 0.13
4. Estimated Weight Percent in Consumer Product	0.06 - 0.06	1.09 - 1.14	0.26 - 0.26
IV. Reassertion of Past CBI Claims	0.50 - 1.00	1.00 - 2.00	2.00 - 4.00

Table D-3. Medium Company Reporting Burden for Sections of Form U

Task	Clerical Hours	Technical Hours	Managerial Hours
I. Facility Identification Information	0.97 - 0.97	1.08 - 1.08	1.14 - 1.14
1. Certification	0.90 - 0.90	1.02 - 1.02	1.12 - 1.12
2. Company Information			
Company Name, Contact, Address	0.04 - 0.04	0.04 - 0.04	0.01 - 0.01
D & B Number, Mailing Address			
3. Plant Site Identification	0.03 - 0.03	0.02 - 0.02	0.01 - 0.01
Plant Name, D & B Number, Address			
EPA ID Number, Mailing Address			
II. Manufacturing Information	0.83 - 0.83	5.19 - 5.83	1.31 - 1.34
1. Chemical Identification	0.30 - 0.30	1.31 - 1.37	0.23 - 0.23
2. Site Limited			
3. Activity			
4. Production Volume (lbs)			
5. Chemical Identification Up-front CBI Substantiation	0.12 - 0.12	1.41 - 1.94	0.38 - 0.38
6. Plant Site Up-front CBI Substantiation	0.09 - 0.09	0.29 - 0.32	0.06 - 0.06
7. Production Volume Range CBI	0.15 - 0.15	0.55 - 0.55	0.18 - 0.18
8. Total Number of Workers	0.08 - 0.08	0.94 - 0.94	0.28 - 0.28
9. Physical State	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
10. Maximum Concentration	0.09 - 0.09	0.69 - 0.71	0.18 - 0.21
III. Processing and Use Information	5.64 - 6.05	24.97 - 25.33	8.40 - 8.87
A. Industrial Processing and Use Exposure Related Data	4.19 - 4.60	18.71 - 18.95	6.07 - 6.48
1. Determination of Applicability	0.41 - 0.41	3.09 - 3.09	0.80 - 0.80
2. Process and Use Code	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
3. 5-Digit NAICS Code	1.06 - 1.36	1.36 - 1.41	0.90 - 0.90
4. Function Code	0.16 - 0.16	0.90 - 0.95	0.33 - 0.33
5. Percent Production Volume	0.41 - 0.41	3.02 - 3.08	0.89 - 0.95
6. Total Number of Processing and Use Sites	0.90 - 0.90	4.64 - 4.70	1.57 - 1.68
7. Total Number of Potentially Exposed Workers	1.25 - 1.37	5.71 - 5.71	1.59 - 1.82
B. Commercial and Consumer End Use Exposure Related Data	1.45 - 1.45	6.26 - 6.38	2.33 - 2.39
1. Determination of Applicability	0.29 - 0.29	1.41 - 1.41	0.32 - 0.32
2. Identification of End Use	0.37 - 0.37	0.97 - 0.97	0.39 - 0.39
3. Percent production Volume	0.56 - 0.56	1.62 - 1.68	0.62 - 0.68
4. Estimated Weight Percent in Consumer Product	0.23 - 0.23	2.25 - 2.31	1.00 - 1.00
IV. Resassertion of Past CBI Claims	0.50 - 1.00	1.00 - 2.00	2.00 - 4.00

Table D-4. Large Company Reporting Burden for Sections of Form U

Task	Clerical Hours	Technical Hours	Managerial Hours
I. Facility Identification Information	0.62 - 1.41	0.96 - 1.10	0.91 - 1.04
1. Certification	0.46 - 1.20	0.77 - 0.90	0.83 - 0.96
2. Company Information			
Company Name, Contact, Address	0.09 - 0.12	0.11 - 0.12	0.04 - 0.04
D & B Number, Mailing Address			
3. Plant Site Identification	0.06 - 0.08	0.08 - 0.08	0.03 - 0.03
Plant Name, D & B Number, Address			
EPA ID Number, Mailing Address			
II. Manufacturing Information	1.84 - 1.93	7.15 - 13.07	2.38 - 7.33
1. Chemical Identification	0.63 - 0.72	2.26 - 3.30	0.35 - 1.31
2. Site Limited			
3. Activity			
4. Production Volume (lbs)			
5. Chemical Identification Up-front CBI Substantiation	0.38 - 0.38	1.17 - 2.22	0.63 - 1.61
6. Plant Site Up-front CBI Substantiation	0.15 - 0.15	0.69 - 1.67	0.34 - 1.32
7. Production Volume Range CBI	0.16 - 0.16	0.52 - 1.57	0.31 - 1.34
8. Total Number of Workers	0.31 - 0.31	1.47 - 2.49	0.37 - 1.37
9. Physical State	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
10. Maximum Concentration	0.21 - 0.21	1.04 - 1.82	0.38 - 0.38
III. Processing and Use Information	3.32 - 3.42	23.72 - 26.89	6.92 - 7.46
A. Industrial Processing and Use Exposure Related Data	2.69 - 2.79	18.57 - 20.88	5.48 - 5.82
1. Determination of Applicability	0.17 - 0.17	1.53 - 1.74	0.43 - 0.44
2. Process and Use Code	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
3. 5-Digit NAICS Code	0.16 - 0.16	3.08 - 3.32	0.72 - 0.72
4. Function Code	0.49 - 0.49	2.02 - 2.31	1.16 - 1.20
5. Percent Production Volume	0.53 - 0.53	4.06 - 4.51	1.03 - 1.25
6. Total Number of Processing and Use Sites	0.58 - 0.68	2.89 - 3.48	0.92 - 0.94
7. Total Number of Potentially Exposed Workers	0.76 - 0.76	4.99 - 5.52	1.22 - 1.27
B. Commercial and Consumer End Use Exposure Related Data	0.63 - 0.63	5.15 - 6.01	1.44 - 1.64
1. Determination of Applicability	0.19 - 0.19	1.18 - 1.27	0.34 - 0.39
2. Identification of End Use	0.13 - 0.13	0.99 - 1.23	0.26 - 0.31
3. Percent production Volume	0.18 - 0.18	1.59 - 1.84	0.61 - 0.66
4. Estimated Weight Percent in Consumer Product	0.13 - 0.13	1.38 - 1.66	0.22 - 0.28
IV. Reassertion of Past CBI Claims	0.50 - 1.00	1.00 - 2.00	2.00 - 4.00

6. Burden Comparison Based on Company Size

This section presents an analysis of the average total reporting burden for small, medium, and large companies to determine if company size plays any clear role in the per chemical reporting burden. The average unweighted reporting burden based on actual survey responses is between 45.1 and 58.5 hours per report for the proposed IUR amendment requirements as presented in Table D-5. Taking into account the historical proportion of small, medium, and large companies, as reported in the 1994 CUS Database, the weighted average reporting burden⁵² was reported as being between 46.6 and 61.0 hours per report.

Table D-5. Per Chemical Reporting Burden Results for Small, Medium, and Large Company Sites

Average Total Reporting Burden (Hours)												
	Clerical		Technical		Managerial		Total		Median		Range	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Small	2.0	2.5	15.9	17.6	5.3	7.4	23.2	27.4	12.8	17.8	5.8	88.8
Medium	8.0	8.9	32.2	34.3	12.8	15.4	53.1	58.5	35.8	39.3	5.6	163.4
Large	6.3	7.7	32.4	43.4	12.2	20.7	50.4	71.9	31.0	35.7	8.4	513.8
All Companies (unweighted)	5.6	6.7	28.7	35.4	10.8	16.3	45.1	58.5	27.9	32.4	5.6	513.8
All Companies (weighted) ^a	5.8	7.0	29.6	36.9	11.1	17.1	46.6	61.0	----	----	----	----

^a Weighting refers to the distribution of average reporting burden by company size based on the proportion of companies within each size class for the set of 1994 IUR reporting companies.

Sources: CUS Database 1996, ICF 1996.

Table D-5 also presents various statistics related to the median values and ranges of estimates as determined from the survey. Based on the estimated number of reports per site (8.4 reports per site

⁵² The weighted burden is calculated as the sum of the products of the average burden for small, medium, and large companies multiplied by the proportion of all IUR reporters as determined from the 1994 CUS Database (see Table D-1).

from the 1994 CUS Database),⁵³ and the weighted reporting burdens presented in Table D-5, the average weighted reporting burden per site is 39.2 to 45.1 hours of clerical time, 219.3 to 269.7 hours of technical time, and 80.1 to 121.2 hours of managerial time, or a total of between 338.6 hours and 436.0 hours per site for all reportable IUR chemicals.⁵⁴

C. Reporting Parameters Results and Discussion

This section presents the reporting parameters used as a means of providing a better understanding of the relationship between sites and chemicals being reported. Two questions on the survey requested information aimed at better characterizing the reporting burden for an average company and an average site. The first of these questions asked for the number of sites that manufacture the same chemical subject to IUR reporting. The second question asks for the number of IUR chemicals that are manufactured at a typical site. Averaged values for responses to these survey questions have been developed by weighting according to the stratification of the reporters under the 1994 IUR reporting period. The results are discussed in Sections 1 and 2 below.

In addition to the questions mentioned above, Sections 3 through 5 of the survey asked participants to estimate the number of incorporative use sites, non-incorporative use sites, and end uses for a typical chemical that would be reported under the IUR. These sections include Chemical Processing, Chemical Use, and Known Commercial and Consumer End Uses of the Chemical, respectively, and can be further interpreted based on the results of the average reporting parameters developed in the survey. The total burden estimates for Section 3 of the draft reporting form, covering information on incorporative uses of the chemical, can be divided by the number of incorporative use sites to determine the relationship between total burden and number of sites. The same approach can

⁵³ According to the survey results, participants estimated an average of 24 to 33 chemicals that are reported per site (see Section 3.b. of this appendix). These estimates have not been used in the burden analysis because actual data for the entire data set of IUR reports from the last reporting period is available from the 1994 CUS Database.

⁵⁴ These results are for the complete Form U, based upon the draft version under consideration at the time of the survey. These results were adjusted to reflect the requirements contained in the amendments at the time of the proposal, which were somewhat different from the requirements at the time of the survey.

be followed to create parallel estimates for the chemical use and known commercial and consumer end use categories. The results of these calculations are presented in Sections 3, 4, and 5 below.

1. Number of Sites per Company Producing a Particular Chemical

For a single chemical subject to IUR reporting, the weighted average number of sites per company was estimated to be between 2.9 and 3.1 sites. Survey results illustrate that these averages vary based on the size of the company. For example, small companies reported that an average of 1.2 sites manufacture a single IUR-reportable chemical. For medium-sized companies, a single IUR-reportable chemical is manufactured at approximately 1.6 sites, while for large companies, a single IUR-reportable chemical is manufactured at between 3.9 and 4.2 sites. The mean, median, and range for the survey results are presented in Table D-6. Nearly 52 percent of the companies surveyed reported that one site produces a single reportable chemical, while 39 companies (48 percent) estimated greater than one site per reportable chemical.

Table D-6. Mean, Median, and Range of Sites per Chemical for Small, Medium, and Large Companies

Sites per Chemical						
	Mean		Median		Range	
	Low	High	Low	High	Low	High
Small	1.2	1.2	1	1	1	4
Medium	1.6	1.6	1	1	1	3
Large	3.9	4.2	2	2	1	30
All Companies (unweighted)	2.7	2.8	1	1	1	30
All Companies (weighted) ^a	2.8	3.0	----	----	----	----

^a Weighting refers to the distribution of average reporting burden by company size based on the proportion of companies within each size class for the set of 1994 IUR reporting companies.

Sources: CUS Database 1996, ICF 1996.

2. Number of IUR Reportable Chemicals per Site

The weighted average estimate of the number of IUR chemicals manufactured at an annual production volume greater than 10,000 pounds at a typical site was reported to be between 24.8 and 34.3 chemicals per site for all survey participants. Small companies averaged 13.0 to 15.0 IUR

chemicals manufactured at a typical site, while medium-sized companies averaged between 27.2 and 46.5 chemicals and large companies averaged between 27.6 and 36.0 chemicals per site. Table D-7 presents the mean, median, and range for these parameters for all survey participants by size class.

For purposes of comparison, it is important to note that the number of chemicals per site, as reported by survey respondents, corresponds to the number of reports per site derived from the 1994 CUS Database. This is because survey respondents estimated the number of chemicals per site is a number consistent with the number of reports per site, as reported in the CUS Database. However, it is worth noting that the average values developed from the survey do not correlate well with the historical information from the 1994 CUS Database (8.4 reports per site). Because the historical data provide an extremely reliable value for this data point, the survey data are not used for determining the number of chemicals per site. Reviewing the median survey data, however, shows a better comparison with the 1994 CUS number. The median value of the survey is between 8.0 and 10.0 chemicals per site, which is in line with the value of 8.4 reports per site derived from the 1994 CUS data set. The median value indicates that at least one half of the respondents reported numbers of chemicals per site that were equal to or less than the averages developed from the CUS data. The extremely high values provided by a few companies in the survey have skewed the average significantly and suggest that the mean may not be representative.

Table D-7. Mean, Median, and Range of Chemicals per Site for Small, Medium, and Large Company Sites

Chemicals per Site						
	Mean		Median		Range	
	Low	High	Low	High	Low	High
Small	13.0	15.0	5.0	5.0	1.0	100.0
Medium	27.2	46.5	7.0	9.0	1.0	500.0
Large	27.6	36.0	10.0	12.5	1.0	300.0
All Companies (unweighted)	23.7	32.9	8.0	10.0	1.0	500.0
All Companies (weighted) ^a	24.4	33.8	----	----	----	----

^a Weighting refers to the distribution of average reporting burden by company size based on the proportion of companies within each size class for the set of 1994 IUR reporting companies. Sources: CUS Database 1996, ICF 1996.

3. Number of Processing Sites

The number of processing sites per chemical affects the burden for developing processing information for reportable chemicals. If there are a large number of processing sites per chemical, the burden will be higher than if there are comparatively fewer sites. This relationship is strongly supported by the survey responses and is presented in Exhibit D-2. Table D-8 presents the mean, median, and range estimates developed from the survey responses for this data. As the table indicates, the weighted average number of processing sites per chemical is between 27.6 and 53.3 sites. These average values may be somewhat misleading because of the extremely wide range of reported values and as such, the median (2.5 to 6.0 sites per chemical) values may be a more accurate representation of the typical number of processing sites per chemical.

Exhibit D-2. Relationship Between Average Reporting Burden and Average Number of Processing Sites for all Companies Surveyed

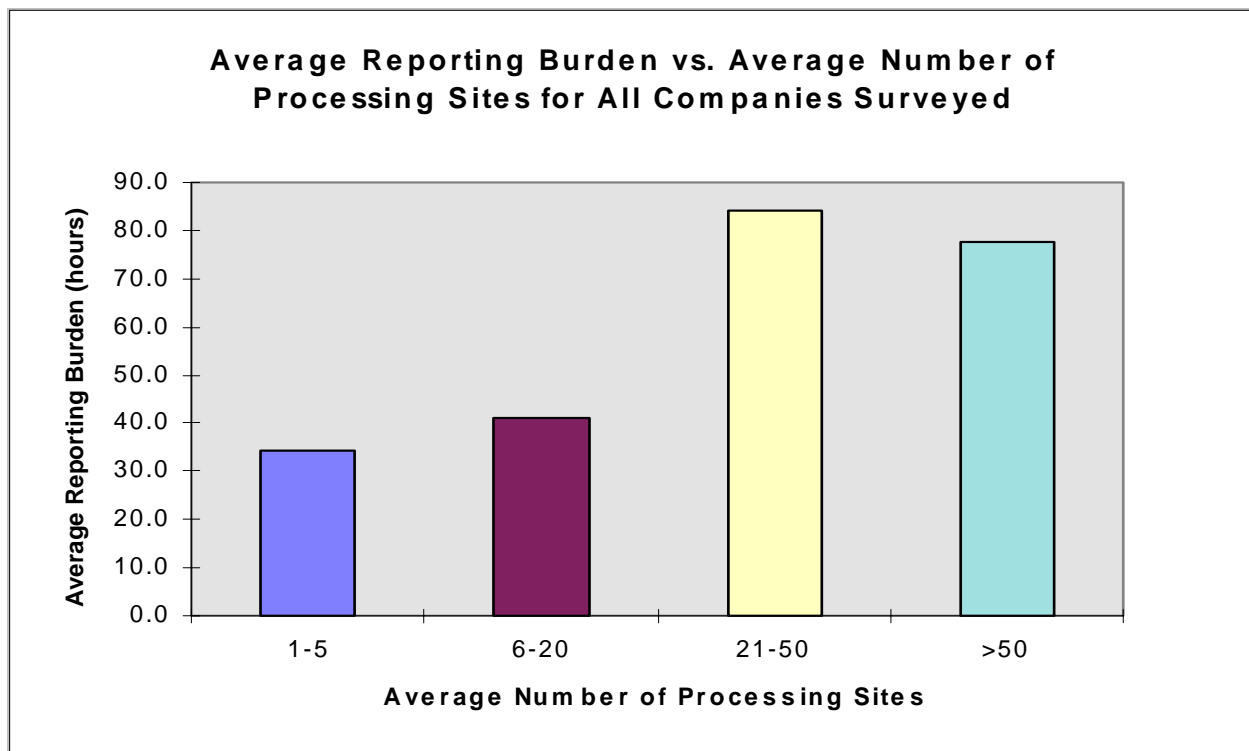


Table D-8. Mean, Median, and Range of Processing Sites per Chemical for Small, Medium, and Large Company Sites

Processing Sites per Chemical						
	Mean		Median		Range	
	Low	High	Low	High	Low	High
Small	31.0	57.3	1.5	2.0	0.0	1,000.0
Medium	11.3	19.7	2.0	5.0	0.0	150.0
Large	32.3	64.0	8.0	12.5	0.0	1,000.0
All Companies (unweighted)	27.4	53.0	2.5	6.0	0.0	1,000.0
All Companies (weighted) ^a	27.6	53.3	----	----	----	---

^a Weighting refers to the distribution of average reporting burden by company size based on the proportion of companies within each size class for the set of 1994 IUR reporting companies.

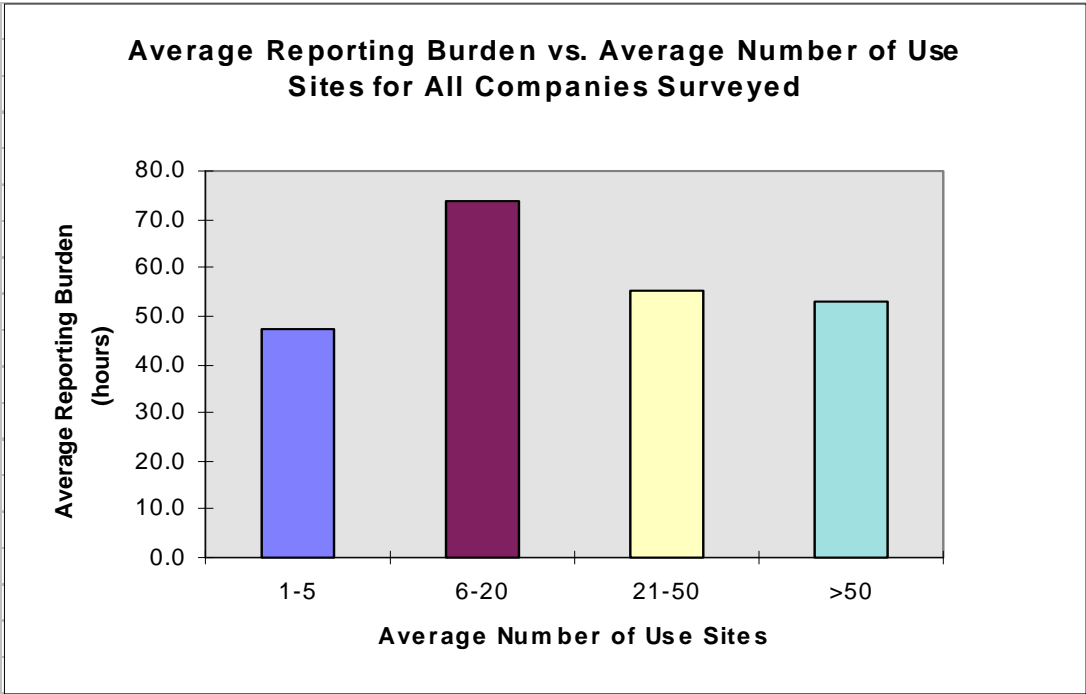
Sources: CUS Database 1996, ICF 1996.

4. Number of Use Sites

Information on the number of use sites per chemical can be examined in the same manner as the information on processing sites presented in the previous section. However, according to the survey data, the relationship between number of use sites and reporting burden is not as clear as the relationship established between number of processing sites and reporting burden. As is shown in Exhibit D-3, there is an increase in burden for companies reporting on 6 or more use sites per chemical compared to those that report on less than 6 use sites per chemical. The results for companies reporting more than 21 use sites per chemical are less certain because of the relatively few survey responses in these ranges.

As presented in Table D-9, the average number of use sites per chemical as reported by all companies is between 21.0 and 45.5 sites. The reported survey values range from 0 to 1,000 sites, with a weighted average number for all companies of between 22.9 and 49.3 use sites per chemical. Large companies, on average, reported significantly more use sites per chemical than small and medium companies. While the average number of use sites is high because of the large range presented in the

survey results, the median values are much lower, indicating that for many companies this data



**Average Reporting Burden
and Average Number of Use Sites for All Companies Surveyed**

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**Table D-9. Mean, Median, and Range of Use Sites per Chemical
for Small, Medium, and Large Company Sites**

Use Sites per Chemical						
	Mean		Median		Range	
	Low	High	Low	High	Low	High
Small	3.2	4.1	0.0	0.0	0.0	20.0
Medium	8.1	51.3	1.0	1.0	0.0	500.0
Large	35.4	65.0	2.0	5.0	0.0	1,000.0
All Companies (unweighted)	21.0	45.5	1.0	1.0	0.0	1,000.0
All Companies (weighted) ^a	22.9	49.3	----	----	----	----

^a Weighting refers to the distribution of average reporting burden by company size based on the proportion of companies within each size class for the set of 1994 IUR reporting companies.

Sources: CUS Database 1996, ICF 1996.

5. Number of End Uses

Information developed from the survey on end uses was analyzed to determine the average number of end uses per chemical for small, medium, and large companies. The weighted average number of end uses per chemical as reported by all surveyed companies is between 3.2 and 5.1 end uses, with estimates ranging from 0 to 100, as presented in Table D-10. While the ranges presented in Table D-10 are broad, both the mean and median estimates for all company sizes within a consistent band of between 1 and 7 end uses per chemical.

**Table D-10. Mean, Median, and Range of End Uses per Chemical
for Small, Medium, and Large Company Sites**

End Uses per Chemical						
	Mean		Median		Range	
	Low	High	Low	High	Low	High
Small	2.4	2.5	1.5	2.0	1.0	8.0
Medium	2.9	3.3	3.0	3.0	1.0	6.0
Large	3.6	6.8	3.0	4.0	0.0	100.0
All Companies (unweighted)	3.1	4.9	3.0	3.0	0.0	100.0
All Companies (weighted) ^a	3.2	5.1	----	----	----	----

^a Weighting refers to the distribution of average reporting burden by company size based on the proportion of companies within each size class for the set of 1994 IUR reporting companies.

Sources: CUS Database 1996, ICF 1996.

Attachment 1. Industry Burden Survey and Cover Letter Sent to Survey Participants.

**SURVEY FOR ESTIMATING THE INDUSTRY BURDEN ASSOCIATED WITH
COLLECTING ADDITIONAL CHEMICAL USE DATA UNDER TSCA SECTION 8
(IUR AMENDMENTS)**

Name of Respondent _____

Position/Title _____

Name of Company _____

Address _____

Phone Number _____

Fax Number _____

**PROPOSED SURVEY FOR ESTIMATING THE INDUSTRY BURDEN ASSOCIATED WITH
COLLECTING ADDITIONAL CHEMICAL USE DATA UNDER TSCA SECTION 8
(IUR AMENDMENTS)**

***** IMPORTANT *****

This survey has been developed to determine the industry effort associated with collecting chemical exposure data under TSCA Section 8. When completing the following questions, please mark all answers according to a base case scenario in which the data being reported applies to **one typical chemical** being produced at **one typical manufacturing site**, unless otherwise instructed in the question. If possible, please provide a breakout of the burden estimate by labor category for each question. Please note that staff from all labor categories may not be required to complete each individual data element. Any and all connection between the identity of the respondent and the answers to the survey will be kept confidential and will not be provided to EPA.

PART 1. FACILITY IDENTIFICATION INFORMATION

Section 1.1. Certification

1. The reporting form requires a signature certifying that the information provided is complete and accurate. Please estimate the amount of time that will be required to complete this certification, including the time needed for final review (legal and technical) and verification of information (note: do not include time that is covered in other survey questions):

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management (including legal)
Certification			

Section 1.2. Plant Site Identification

2. This section of the reporting form requires identification and address information for a typical manufacturing plant site. Please indicate the estimated amount of time required to provide this information (including plant site name, CBI, Dun & Bradstreet number, and plant site address):

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Plant Site Identification			

3. The reporting form requires indication of the EPA Identification Number (EPA ID) that corresponds to the facility being reported. The EPA ID is a 12-character number assigned to facilities covered by RCRA. Facilities not covered by RCRA are not likely to have an assigned EPA ID. Please indicate the estimated time to determine the EPA ID for the facility being reported (in the case that a typical facility at your company does not have an EPA ID, enter the estimated time to determine that an EPA ID does not exist, and check the Not Applicable box below):

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
EPA Identification Number			

EPA Identification Number Not Applicable	
---	--

Section 1.3. Company Information

4. This section of the reporting form requires the contact information for a technical contact including address and telephone number. Please estimate the amount of time that would be necessary to provide this:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Company Information			

5. To calculate the amount of time that may be needed to provide company- and site-specific information for all chemicals and associated plant sites, it is necessary to determine the number of reportable chemicals produced at a typical facility and how many facilities may produce one typical chemical.

- a. Please provide an estimate of the number of plant sites that manufacture a typical chemical:

Estimated Number of Plant Sites That Manufacture a Typical Chemical	
--	--

- b. Please provide an estimate of the number of chemicals with annual volume greater than 10,000 pounds manufactured at a typical plant site:

Estimated Number of Chemicals Manufactured at a Typical Plant Site	
---	--

PART 2. CHEMICAL SPECIFIC INFORMATION

Section 2.1. Manufacturing Information

6. This section of the reporting form requires information (subsections a - f) regarding manufacturing specifications. Please provide burden estimates in the box below based on the following data requirements:
- a. Identifying Number: Provide the CAS number of the chemical.
 - b. ID Code: Indicate the correct tracking code from a list on the back of the reporting form.
 - c. Activity (M or I) and CBI: Provide information on the production of the chemical by indicating "M" (manufacture) or "I" (import); indicate if this is CBI.
 - d. Site Limited and Indication of CBI: Indicate if the chemical is distributed for commercial purposes outside of the plant site; also, indicate if this is CBI.
 - e. Production Volume in Pounds and Indication of CBI: Provide the production volume, in pounds, of the relevant chemical manufactured at this plant site; also, indicate if this is CBI.
 - f. Specific Chemical Name: Indicate the name of the chemical for which information is being provided.

Please indicate the estimated amount of time necessary to complete subsections a - f for one typical chemical at a typical manufacturing plant site:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Manufacturing Information (a - f)			

PART 2. (Continued)

7. This section of the reporting form requires indication of CBI status for Chemical Identity. A CBI claim for this information requires up-front substantiation, including a justification of why release of this information would jeopardize the market position of the company. Indicate the estimated amount of time to indicate CBI status and provide substantiation for a CBI claim, if applicable, for chemical identity:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Chemical Identity			

- a. If this information is not typically claimed CBI, please indicate that by checking the box below.

Chemical Identity CBI Substantiation Not Applicable	
--	--

8. This section of the reporting form requires indication of CBI status for Facility Identity. A CBI claim for this information requires up-front substantiation, including a justification of why release of this information would jeopardize the market position of the company. Indicate the estimated amount of time to indicate CBI status and provide substantiation for a CBI claim, if applicable, for facility identity:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Facility Identification			

- a. If this information is not typically claimed CBI, please indicate that by checking the box below.

Facility Identification CBI Substantiation Not Applicable	
--	--

PART 2. (Continued)

9. This section of the reporting form requires indication of CBI status of production volume range information. The ranges are:

10,000 - 100,000 lbs/yr

50,000,000 - 100,000,000 lbs/yr

100,000 - 1,000,000 lbs/yr

100,000,000 - 500,000,000 lbs/yr

1,000,000 - 10,000,000 lbs/yr

500,000,000 - 1,000,000,000 lbs/yr

10,000,000 - 50,000,000 lbs/yr

If the production volume range is not indicated to be CBI, the information may be made available to the public. Please indicate the estimated amount of time required to indicate CBI status of the production volume in ranges:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
CBI Status of Production Volume in Ranges			

- a. For what percentage of the chemicals reported by your company would the production volume range be claimed CBI?

Percent of Chemicals Whose Production Volume Range Would Be Claimed CBI	
---	--

10. This section of the reporting form requires indication of the appropriate range of the total number of workers potentially exposed to the chemical being reported and indication of CBI status for that information. The ranges are:

Fewer than 10 workers

10 to 20 workers

25 to 100 workers

100 to 250 workers

250 to 1,000 workers

More than 1,000 workers

Please indicate the estimated amount of time required to provide this information:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Estimated Total Number of Potentially Exposed Workers			

PART 3. INFORMATION ON CHEMICAL PROCESSING - INCORPORATIVE ACTIVITIES

Please be advised that the reporting form requires some information in this section to be provided by indicating ranges rather than exact numbers. The ranges are as follows:

number of processing sites

Fewer than 10
10 to 20
25 to 100
100 to 250
250 to 1,000
More than 1,000

number of potentially exposed workers

Fewer than 10
10 to 20
25 to 100
100 to 250
250 to 1,000
More than 1,000

maximum concentration (wt %)

Fewer than 1%
1 to 30%
30 to 60%
60 to 90 %
Less than 90%

Please note that codes will be designated to stand for various ranges (e.g., the letter 'b' will mean between 10 and 20 processing sites).

11. Not Applicable:

The first step in this section requires determination of whether or not the chemical being reported undergoes chemical processing. Please indicate the estimated amount of time necessary to determine whether chemical processing is applicable for the chemical being reported:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Not Applicable			

If **chemical processing does not apply** to any chemicals that your company reports under TSCA Section 8 , please skip to PART 4.

If **chemical processing does apply** to one or more of the chemicals that your company reports, please continue with PART 3.

PART 3. (Continued)

12. Function Codes:

This section requires determination of the functions and function codes (provided in Attachment 1) for the chemical being reported. Although the information required for each category is the same, the reporting form divides the functions into two categories - incorporation into a formulation, mixture, or reaction product and incorporation into an article. Please indicate the estimated amount of time necessary to determine and report the function codes for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Function Codes			

13. SIC Code:

For each function code of the chemical that is reported, SIC codes must be reported for processing sites. It has not been determined whether a 3-digit or a 4-digit SIC code will be required. Please indicate separately the estimated amount of time required to determine and report a chemical's 4-digit and 3-digit SIC codes for one function category:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
3-Digit SIC Code			
4-Digit SIC Code			

14. Percent Production Volume:

The reporting form requires a determination of the percentage of production volume of the chemical that is processed in each specific combination of SIC code and function code. The percent production volume is required to be reported within $\pm 10\%$ of the actual percentage. Since the total production volume of the chemical has already been determined in Part 2 of the reporting form, the information necessary for the calculations required here includes only the amount of the chemical that is used in each industry classification (SIC code). Please indicate the estimated amount of time required to calculate and report the appropriate range for the percentage of production volume for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Percent Production Volume			

PART 3. (Continued)

15. Number of Processing Sites:

The reporting form requires information on the appropriate range for the number of processing sites that receive the chemical from the specific production plant for each combination of function code and SIC code. Please indicate the estimated amount of time necessary to provide the appropriate range for the number of processing sites for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Number of Processing Sites			

16. Number of Potentially Exposed Workers:

The appropriate range for the number of potentially exposed workers at all processing sites for each combination of function code and SIC code is also required in this section of the form. Please indicate the estimated amount of time necessary to determine the appropriate range for the number of potentially exposed workers for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Number of Potentially Exposed Workers			

17. Maximum Concentration (wt%):

The appropriate range for the maximum concentration, by weight percentage, of the chemical that is incorporated into a formulation, mixture, or reaction product or into an article is also required in this section of the form. Please indicate the estimated amount of time necessary to determine the appropriate range for the maximum concentration, by weight percentage, for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Maximum Concentration (wt%)			

PART 3. (Continued)

18. Repackaging:

Some percentage of the chemical may be repackaged rather than processed or used in another product after manufacture. Please indicate the estimated amount of time that would be necessary to complete the following data for information about repackaging for a typical chemical:

Required Information (Reported in Ranges)	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Percent of Production Volume			
Number of Repackaging Sites			
Number of Exposed Workers			
Maximum Concentration (wt%)			
CBI Claims			

PART 4. INFORMATION ON CHEMICAL USE - NON-INCORPORATIVE ACTIVITIES

Please be advised that the reporting form requires some information in this section to be provided by indicating ranges rather than exact numbers. The ranges are as follows:

number of processing sites

Fewer than 10
10 to 20
25 to 100
100 to 250
250 to 1,000
More than 1,000

number of potentially exposed workers

Fewer than 10
10 to 20
25 to 100
100 to 250
250 to 1,000
Less than 1,000

maximum concentration (wt %)

Fewer than 1%
1 to 30%
30 to 60%
60 to 90 %
More than 90%

Please note that codes will be designated to stand for various ranges (e.g., the letter 'b' will mean between 10 and 20 non-incorporative use sites).

19. Not Applicable:

The first step in this section requires determination of whether or not use in non-incorporative activities occurs for the chemical being reported. Please indicate the estimated amount of time necessary to determine whether chemical use information must be reported:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Not Applicable			

If chemical use in non-incorporative activities does not apply to any chemicals that your company reports under TSCA Section 8, please skip to PART 5.

If chemical use in non-incorporative activities does apply to one or more of the chemicals that your company reports, please continue with PART 4.

PART 4. (Continued)

20. Function Codes:

The first step in this section requires determination of the functions and function codes (provided in Attachment 1) for the chemical being reported. Please indicate the estimated amount of time necessary to determine and report the function codes for a typical chemical at all use sites:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Function Codes			

21. SIC Code:

For each function code of the chemical that is reported, SIC codes must be reported for use sites. It has not been determined whether a 3-digit or a 4-digit SIC code will be required. Please indicate separately the estimated amount of time required to determine and report a chemical's 4-digit and 3-digit SIC codes for one function category:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
3-Digit SIC Code			
4-Digit SIC Code			

22. Percent Production Volume:

The reporting form requires a determination of the percentage of production volume of the chemical that is used in each specific industry category by SIC and function code combination. The percent production volume is required to be reported within $\pm 10\%$ of the actual percentage. Since the total production volume of the chemical has already been determined in Part 2 of the reporting form, the information necessary for the calculations required here includes only the amount of the chemical that is used in each industry classification (SIC code). Please indicate the estimated amount of time required to calculate and report the appropriate range for the percentage of production volume for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Percent Production Volume			

23. Number of Use Sites:

The reporting form requires information on the number of use sites that receive the chemical from the specific production plant for each combination of function code and SIC code. Please indicate the estimated amount of time necessary to provide the appropriate range for the number of use sites for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Number of Use Sites			

24. Number of Potentially Exposed Workers:

The number of potentially exposed workers at all of the use sites for each combination of function code and SIC code is also required in this section of the form. Please indicate the estimated amount of time necessary to determine the appropriate range for the number of potentially exposed workers for a single function code and SIC code combination for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Number of Potentially Exposed Workers			

PART 5. KNOWN COMMERCIAL AND CONSUMER END-USES OF CHEMICAL

Please be advised that the reporting form requires some information in this section to be provided by indicating ranges rather than exact numbers. The ranges are as follows:

maximum concentration (wt %)	number of potentially exposed workers
Less than 1%	Fewer than 10
1 to 30%	10 to 20
30 to 60%	25 to 100
60 to 90 %	100 to 250
250 to 1,000	250 to 1,000
Greater than 90%	More than 1,000

Please note that codes will be designated to stand for various ranges (e.g., the letter 'b' will mean between 10 and 20 potentially exposed workers).

25. Not Applicable:

The first step in this section requires determination of the existence of commercial and consumer end-uses involving the chemical being reported. Please indicate the estimated amount of time necessary to determine whether known end-uses for the chemical must be reported:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Not Applicable			

If commercial and consumer end-uses do not apply to any chemicals that your company reports under TSCA Section 8, please skip to PART 6.

If commercial and consumer end-uses do apply to one or more of the chemicals that your company reports, please continue with PART 5.

PART 5. (Continued)

26. End-Use Categories:

The reporting form provides the following end-use categories and requires that all of the appropriate uses be designated on the form. Please indicate the estimated amount of time that would be necessary to determine the use categories of a typical chemical:

Adhesives and Sealants
Automotive Care Products
Glass/Ceramic Products
Leather Products
Metal Products
Paint and Coatings
Polishes and Sanitation
Soaps and Detergents
Wood/Wood Furniture

Cosmetics and Toiletries
Electrical/Electronic Products
Fabric/Textiles/Apparel
Lubricants, Greases, & Fuel Additives
Paper Products
Pesticides and Lawn/Garden Products
Rubber/Plastic Products
Transportation Products
Other

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
End-Use Categories			

27. Percent of Production Volume:

The reporting form requires that the percentage of production volume for each end-use be determined. The percent of production volume is required to be reported within $\pm 10\%$ of the actual percentage. Please indicate the estimated amount of time that would be necessary to provide percent of production volume information for a typical chemical:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Percent of Production Volume			

PART 5. (Continued)

28. Percent by Weight of Chemical in Product:

The reporting form requires an estimate of the appropriate range of the percentage (by weight) of the chemical in the designated end-use category. Please indicate the estimated amount of time that would be necessary to indicate the appropriate range for a typical chemical in a typical end-use category:

Required Information	Estimated Hours Required By Each Staff Level		
	Clerical	Technical	Management
Percent by Weight of Chemical in End-Use			

PART 6. GENERAL QUESTIONS ON REPORTING

The following questions request information about all of the Parts and Sections of the reporting form as a whole. However, please continue to mark all answers according to a base case scenario in which the data being reported applies to **one typical chemical** being produced at **one typical manufacturing site**, unless otherwise instructed in the question.

29. Please provide numerical estimates that correspond to the following statements assuming the base case scenario:

DATA ELEMENT	RESPONSE (Please provide a numerical response)
Average number of function codes per chemical produced at a typical manufacturing site	
Average number of 3-digit SIC codes per function code	
Average number of 4-digit SIC codes per function code	
Average total number of incorporative processing sites to which a typical chemical is distributed from one manufacturing plant	
Average total number of non-incorporative use sites to which a typical chemical is distributed from one manufacturing plant	
Average number of end-uses of a typical chemical that would be reported based upon categories listed in Question 26	

PART 6. (Continued)

30. Indicate the data elements below that are required in the reporting form that are presently available in a company database or otherwise readily available:

DATA ELEMENT	AVAILABLE (check if yes)
PART 1: FACILITY IDENTIFICATION INFORMATION	
Manufacturing Plant Site Name	
Company Technical Contact Name	
PART 2: CHEMICAL SPECIFIC INFORMATION	
Manufacturing Activity (M or I)	
Manufacturing Plant Site Limited Chemical Use	
Total Production Volume	
Plant Link to Chemical	
Chemical Link to Plant	
Total Number of Potentially Exposed Workers	
Process Category	
PART 3. INFORMATION ON CHEMICAL PROCESSING - INCORPORATIVE ACTIVITIES	
Function Code	
3-Digit SIC Code	
4-Digit SIC Code	
Percent Production Volume	
Numbers of Potentially Exposed Workers	
Numbers of Processing Sites	
PART 4. INFORMATION ON CHEMICAL USE - NON-INCORPORATIVE ACTIVITIES	
Function Code	
3-Digit SIC Code	
4-Digit SIC Code	
Percent Production Volume	
Numbers of Potentially Exposed Workers	
Numbers of Use Sites	
PART 5. KNOWN COMMERCIAL AND CONSUMER END-USES OF CHEMICAL	
End-Use Category	
Percent Production Volume	
Estimated Weight Percentage in Consumer Product	

PART 6. (Continued)

31. Indicate which of the required data elements your company is likely to claim CBI:

DATA ELEMENT	CLAIM CBI (check if yes)
PART 1: FACILITY IDENTIFICATION INFORMATION	
Manufacturing Plant Site Name	
Company Technical Contact Name	
PART 2: CHEMICAL SPECIFIC INFORMATION	
Manufacturing Activity (M or I)	
Manufacturing Plant Site Limited Chemical Use	
Total Production Volume	
Total Production Volume Within a Range	
Plant Link to Chemical	
Chemical Link to Plant	
Total Number of Potentially Exposed Workers	
Process Category	
PART 3. INFORMATION ON CHEMICAL PROCESSING - INCORPORATIVE ACTIVITIES	
Function Code	
3-Digit SIC Code	
4-Digit SIC Code	
Percent Production Volume	
Numbers of Potentially Exposed Workers	
Numbers of Processing Sites	
PART 4. INFORMATION ON CHEMICAL USE - NON-INCORPORATIVE ACTIVITIES	
Function Code	
3-Digit SIC Code	
4-Digit SIC Code	
Percent Production Volume	
Numbers of Potentially Exposed Workers	
Numbers of Use Sites	
PART 5. KNOWN COMMERCIAL AND CONSUMER END-USES OF CHEMICAL	
End-Use Category	
Percent Production Volume	
Estimated Weight Percentage in Consumer Product	

PART 6. (Continued)

32. Please indicate if your company has a schedule for the retention of records, including chemical production information:

Yes	No

a. If yes, for how long does your company retain records?

b. Please explain:

33. Please indicate if your company has a policy for the destruction of records:

Yes	No

b. Please explain:

34. We welcome any suggestions you may have concerning improvements in the reporting form that has been provided here. You may provide comments by telephone or mail to:

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ATTACHMENT 1

Proposed List of Function Codes for IUR Reporting	
Intermediates (Only valid for incorporation into product)	Lubricants and Lubricant Additives
Adsorbents and Absorbents	Odor Agents
Adhesive and Binding Agents	Oxidizing Agents
Aerosol Propellants	Photosensitive Chemicals
Agricultural Chemicals	pH-Regulating Agents
Anti-Adhesive Agents	Process Regulators, used in Polymerization or Vulcanization Processes
Bleaching Agents	Process Regulators other than Polymerization or Vulcanization
Chemical Processing Aids, not otherwise listed	Reducing Agents
Coloring Agents	Reprographic Agents
Corrosion Inhibitors and Anti-Scaling Agents	Solvents, Cleaning/Degreasing
Electroplating Agents	Solvents, Become Part of Product Formulation
Fillers	Solvents, For Chemical manufacture and Processing that are Not Part of the End Product
Fixing Agents	Stabilizers
Flame Retardants	Surface Active Agents, Cleaning Agents
Flotation Agents	Surface Active Agents, Emulsifying Agents
Fuel and Fuel Additives	Viscosity Adjustors
Functional Fluids, Hydraulic and Transmission Fluids	Sterilants/Disinfectants/Biocides
Functional Fluids, Heat Transfer Agents	Other
Functional Fluids, Electrical Conductive and Semiconductive Agents	

Attachment 2. Draft IUR Amendments Reporting Form Sent to Survey Participants.

APPENDIX E. SENSITIVITY ANALYSIS

To examine the effects of two parameters on the expected costs of the IUR amendments, a sensitivity analysis has been performed. The sensitivity cases presented in this appendix assess the impacts on costs of certain assumptions presented in the cost analysis. The cost analysis presented in Chapter III of this report incorporates several assumptions regarding the average chemical that would be reported under the proposed IUR amendments. Those assumptions include the number of reports per site (8.4 reports per site under the amendments), the types of chemicals reported under the amendments (organic and inorganic chemicals), the length of a reporting cycle under the amendments (4 years), and a discount rate of three percent.

Sensitivity cases were developed for two of these parameters by examining the effect that they have on the quantified costs. The sensitivity cases are as follows:

Number of Reports per Site

Scenario 1a assumes that each site would submit one report.

Scenario 1b assumes that each site would submit 20 reports.

Variation in Discount Rate

Scenario 2 changes the discount rate used to calculate costs of the proposed IUR amendments from three percent to seven percent.

A cost analysis has been developed for each case presented in the sensitivity analysis. Table E-1 presents the assumptions for each of these sensitivity cases. As shown in Table E-2, the sensitivity analysis for Scenarios 1a and 1b was based on variations in the assumed number of reports per site. For these options, incremental costs are presented only in terms of the effect on cost per site. Tables E-3 and E-4 present the first year incremental, baseline, and total net present values and annualized costs for all of the reporting threshold options under Scenario 2 (i.e., using a seven percent discount rate). The costs for the IUR amendments proposed option (Option 4) are also presented in each table.

1. Changing the Number of Reports per Site

An increase in the assumed average number of reports per site will significantly increase the overall average cost burden per site of the IUR amendments. Under Scenario 1a per site costs are approximately 3 to 6 times lower than the costs of the proposed option because of the decrease in the

number of reports per site. Conversely, increasing the number of reports per site to 20 increases per site costs by more than a factor of 2. Based on the data presented in Chapter III, it is clear that these estimates (i.e., one report and 20 reports per site) under- and over-estimate, respectively, the costs for a typical site.

Table E-1. Assumptions Incorporated in the Sensitivity Cases

Scenario	Sites	Reports	Reporting Cycle	Comments
Proposal	1	8.4	4 years	proposed option
1a	1	1	4 years	one report per site
1b	1	20	4 years	twenty reports per site
2	1	8.4	4 years	seven percent discount rate

Table E-2. Results for Sensitivity Around the Number of Reports per Site

Scenario	Reports Per Site	Incremental Cost Per Site (1997\$)	
		Low	High
Proposal	8.4		
Organic Chemicals		\$21,169	\$27,112
Petroleum Streams		\$5,780	\$10,407
Inorganic Chemicals		\$24,878	\$32,526
Scenario 1a	1		
Organic Chemicals		\$3,790	\$4,747
Petroleum Streams		\$1,958	\$2,758
Inorganic Chemicals		\$4,533	\$5,849
Scenario 1b	20		
Organic Chemicals		\$48,412	\$62,171
Petroleum Streams		\$11,769	\$22,397
Inorganic Chemicals		\$56,771	\$74,343

**Table E-3. Incremental Net Present Values and Annualized Costs of Threshold Options
Discounted at Seven Percent (million 1997\$)**

Option	Net Present Value ^a		Annualized Cost	
	Low	High	Low	High
Threshold Options				
Option 1	\$243.6	\$333.6	\$23.0	\$31.5
Option 2	\$203.0	\$277.5	\$19.2	\$26.2
Option 3	\$181.0	\$262.7	\$17.1	\$24.8
Option 4	\$165.1	\$234.6	\$15.6	\$22.1
Option 5	\$145.2	\$222.0	\$13.7	\$21.0
Option 6	\$129.3	\$194.0	\$12.2	\$18.3
Option 7	\$118.1	\$181.3	\$11.1	\$17.1
Option 8	\$91.0	\$150.6	\$8.6	\$14.2
Option 9	\$155.9	\$224.6	\$14.7	\$21.2
Reporting Exemption Options				
Option 4	\$165.1	\$234.6	\$15.6	\$22.1
Option 10	\$189.1	\$258.4	\$17.8	\$24.4
Option 11	\$123.8	\$175.9	\$11.7	\$16.6
Reporting Cycle Options				
Option 4	\$165.1	\$234.6	\$15.6	\$22.1
Option 12	\$226.2	\$347.1	\$21.4	\$32.8
Option 13	\$297.0	\$430.2	\$28.0	\$40.6
Option 14	\$44.8	\$61.1	\$4.2	\$5.8

Note: 1. Option 4 is the proposed option.
2. Incremental costs may not calculate exactly due to rounding.
^a NPV determined for a 20 year period.

Table E-4. Total Net Present Values and Annualized Costs of Threshold Options Discounted at Seven Percent (million 1997\$)

Option	Net Present Value ^a		Annualized Cost	
	Low	High	Low	High
Baseline	\$57.0	\$90.0	\$5.4	\$8.5
Threshold Options				
Option 1	\$300.6	\$423.6	\$28.4	\$40.0
Option 2	\$260.0	\$367.5	\$24.5	\$34.7
Option 3	\$238.0	\$352.7	\$22.5	\$33.3
Option 4	\$222.1	\$324.6	\$21.0	\$30.6
Option 5	\$202.2	\$312.0	\$19.1	\$29.4
Option 6	\$186.3	\$284.0	\$17.6	\$26.8
Option 7	\$175.1	\$271.3	\$16.5	\$25.6
Option 8	\$148.0	\$240.6	\$14.0	\$22.7
Option 9	\$213.0	\$314.6	\$20.1	\$29.7
Reporting Exemption Options				
Option 4	\$222.1	\$324.6	\$21.0	\$30.6
Option 10	\$246.1	\$348.4	\$23.2	\$32.9
Option 11	\$180.8	\$265.9	\$17.1	\$25.1
Reporting Cycle Options				
Option 4	\$222.1	\$324.6	\$21.0	\$30.6
Option 12	\$276.7	\$426.8	\$26.1	\$40.3
Option 13	\$347.5	\$509.9	\$32.8	\$48.1
Option 14	\$57.8	\$81.6	\$5.4	\$7.7

^a NPV determined for a 20 year period.

2. Changing the Discount Rate

Since the benefits resulting from the proposed regulation will not occur simultaneously with the costs, it is necessary to discount the future streams of costs and benefits before comparing them. The time horizon over which costs and benefits are discounted in this analysis is 20 years. A discount rate of three percent is used in Chapter III, however, this sensitivity scenario explores the effect of a seven percent discount rate on the incremental and total costs of the fourteen threshold options.

There is considerable debate in the economics discipline whether to use the social rate of time preference or the rate of return on investment when discounting. According to recent literature, the rates are quite similar so choosing one or the other will not make much difference in the magnitude of the present value estimate. The debate between using a rate of return on investment capital and the consumption rate of return focuses on whether investment or consumption is being displaced. Some discounting theory emphasizes that one dollar diverted from productive investment reduces the stream of production created by that marginal investment, while a dollar diverted from consumption would only substitute one type of consumption for another. This diverted capital argument is the basis of the "shadow price of capital" approach to discounting, which treats displaced investment as "costing" more than displaced consumption. The practical difficulty in implementing this approach is to identify which costs are diverted investments, and which are diverted consumption. Various pragmatic approaches to solving this dilemma have been proposed and used by EPA and other government agencies for regulatory analysis, including the "two-staged" discounting approach (Kolb and Scheraga 1990), or a single "blended rate" somewhere between the rate of investment return and the consumption return.

Recent developments in the economic literature have raised serious questions about the extent to which capital is actually "displaced" today. The displaced capital theory maintains that because regulation diverts funds from alternative investments, some investment opportunities are not undertaken. The pool of available capital is assumed to be fixed, forcing some investment to be foregone when capital is diverted. While the pool of available capital is relatively fixed (at least in the short run) in a closed economy, in an open economy capital can flow in from other countries. The increased demand for investment capital in the United States (created in part to finance the federal deficit) has attracted large amounts of capital into the country, and many economists feel this has significantly reduced the pressure that federal borrowing has had on real interest rates. While the supply of capital is not perfectly elastic, neither is it perfectly inelastic. An elastic supply of capital reduces the difference between investment rates of return and consumer rates of return.

Estimates of real rates of return on investment are lower than many people believe. The real rate of return on United States government bonds has been near zero percent for most of this century, while the annual return on a broad portfolio of stocks has averaged near four percent. In general, stocks have done better since 1980 (averaging 4.26 percent) than in the other periods this century, but the rate

of return may return to historic norms in the future (Freeman 1993). Thus, the real rates of return on investment opportunities range from near zero to four percent.

The issues involving the appropriate discount rates and procedures are complex, and are not likely to be resolved soon. Much of the recent economic literature summarizing the discounting debate concludes that discount rates reflecting either the social rate of time preference or the rate of return on investments are the appropriate discount rates to use, and also concludes that there is not much difference between the rates. For example, Moore and Viscusi (1990) find no evidence that the rate of time preference for environmental-related health effects differs from financial rates of return and cite evidence that a two percent rate is appropriate. Lind (1990) recommends a range of one to three percent, and Freeman (1993) recommends two to three percent.

Based on the information presented above, a three percent discount rate has been adopted as the most appropriate rate for use in this analysis. However, the results of discounting costs at a seven percent rate are presented in Tables E-3 and E-4. A comparison of these tables with Tables III-27 and III-28 reveals an increase in incremental annualized costs by approximately 26 percent and a decrease in incremental net present values by approximately 10 percent for most of the options. For example, using a seven percent discount rate, the incremental annualized costs for Option 4 (the proposed option) increase by approximately 26 to 27 percent for both low and high estimates, while incremental net present value costs decrease by 10 percent for both low and high estimates with respect to the three percent discount rate.